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THE SOCIAL STATUS OF MEDICAL PRACTICE*

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MINNEAPOLIS

This is a significant occasion. Here sit the senior class of St. Louis University, School of Medicine, for the last lecture which they as students will ever listen to. Here are gathered the faculty to lend emphasis to this last lecture. Here stand I who have taught these students and now am chosen to speak last for this faculty to this class. Here on the table are rolls of parchment—the visible tokens of years of toil, of a task accomplished and of this strong, old university's stamp of approval. You, my boys, will presently come up here to receive these diplomas. You will cease to be students in the technical sense. You will become Doctors of Medicine. It is a good time for "balancing the books," for inventory, for forward-looking.

From the army of men of your age you have been picked out. You are a favored few of a large social group. You have received the discipline of a useful and honorable profession. You have been prepared for work in the world. You may think you have done this yourselves, but you have not. Your ancestors who passed on to you choice gifts of heredity have done it. Your fathers and your mothers who denied themselves for you have done it. The race of doctors from the nameless founder of medicine far back in the dark of prehistoric time has made it possible for you to sit here. Large-hearted philanthropy has done it. Wise statesmanship has done it. Broad-minded municipal spirit has done it. The mighty power of human society has done it. Admitting that you have done your share and done it well, the question nevertheless confronts you, "How will you repay these priceless gifts which humanity has conferred on you?"

Now I warn you that I am not going to tell you how to repay. I am not going to lecture you on your duties. This is not going to be a sermon. You are old enough to decide for yourselves. The sentiment I am going to set before you is this from Thomas Huxley: "Learn what is true in order to do what is right."

Knowing What is True: That is where the shoe pinches. Life is very complex. The world is full of people. Interests are multiple and conflicting. Vision is partial and fleeting. Do the best you may, nevertheless the life of each of you is bound to be, in a measure, "A Doctor's Dilemma." If you succeed here, you must fail there. If you master this, you must let that other go. If you save this man's life, you must leave that other perhaps to die.

No one can deliver you from these alternatives. You must make your own judgments. They are what make life worth while. You must stiffen your backbone and carry your own load of responsibility. You must for your own selves "learn what is true in order to do what is right." This address is intended to direct your eyes toward some of the great problems concerning which you must learn the truth, if you are to lay out your lives as physicians along broad and satisfying lines; if you are to be "doctors" in the fullest sense.

EGOISM AND ALTRUISM

At the start I wish to remind you of the two motives which knowingly or not will rule the life of every one of you. First is the egoistic or individualistic motive. This begins with the fact that each one of us is a unit, a single separate animal. Each must live his own life. Each must breathe for himself, eat for himself, sleep for himself, think for himself, enjoy for himself, be sick for himself, die for himself. We cannot get around or deputize these inexorable necessities. Consequently the egoistic motive from the birth of humanity has always been very powerful. It says: "Push forward. Overcome obstacles. Drive off opposition. Overwhelm competitors. Grasp and do not let go. Take wherever ye find. Grow fat, for it is your right. Live your own life fully, for it is all you have. Let others look out for themselves." Thus speaks individualism. Its battle-cry is the Survival of the Strongest. Its prototype is the Superman.

Over against this is the altruistic or group motive. It begins with the fact that each one of us had human progenitors. Our mothers bore us into the world. Our fathers protected us in early life. But all humanity has done in a measure what our fathers and mothers have done. We are members of a great community. We have inherited and must bequeath. The race is more than the individual. We *cannot* live for ourselves alone. We ought *not* to live for ourselves alone. Hence arises the altruistic philosophy, and it says, "Do unto others as ye would they should do unto you." Its battle-cry is Human Brotherhood. Its prototype is Jesus of Nazareth.

Thus are and thus speak the two great motives, egoism and altruism. They seem antagonistic, unlike, far apart as the poles. Yet from a practical point of view we see both acting together in every human being. No man can live absolutely by or for himself. The hermit hunter of the mountains comes down for bullets and gunpowder. The all-conquering Napoleon must make dukes and kings of his generals. On the

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other hand, no man can live wholly for others. In the first place he cannot get around the imperative necessities of his own body. He must provide for himself. The merchant who gives away his goods soon has no goods to give. The missionary who goes unprotected among cannibals is eaten. To come nearer home, the doctor who does not charge for service will not long be able to serve. It amounts in the end to this: A reasonable regard for self is indispensable that we may serve others. A reasonable service for others is indispensable that we may truly serve ourselves.

I have led up to this thought with three objects in view: First, to make clear to you that knowingly or unknowingly each of you is bound to adjust his life between the ideals of egoism and altruism. Should it not be knowingly? Should not each move in your career be determined after consideration from both points of view? For one I trust that the latter may be your method of planning your lives—thoughtfully, courageously, with due regard for yourselves and others.

Secondly, I wish you to see that more and more through the ages the altruistic note has become dominant in human affairs. First it was the family for which man limited his individual freedom. Next it was the neighborhood. Next, the tribe. Next, the nation. And with each recognition of altruistic obligation has come further surrender of the individual and further advance of civilization. To-day it may be prophesied safely that no individual right, whether of property or person, will be allowed permanently to stand which conflicts with the prosperity, happiness or health of the organized whole. You will note that I have used the word health here for the first time. The right of society to health is one of the latest rights to be recognized. The right and duty of society to secure and protect health are bound more and more to come to the front as prime motives in limiting the individual. This is a fact of growing significance. It is bound to affect your lives. I shall return to this topic later in this address. For the present I wish to advance my third reason for discussing individualism and altruism. It concerns your chosen profession. Medicine began and has continued until recently quite strictly as an individualistic calling. The nature of the profession led inevitably to this history. Men are sick as individuals. Treating their ailments began as a personal service. As society advanced the intimate relation of patient and physician came more and more to be emphasized. Reasons of business expediency, of personal modesty and of family intimacy made the relation confidential. The individualistic desire to get well is an instinct ever clamorous and insistent, whereas the social value of health is an intellectual concept only slowly gaining acceptance and still more slowly becoming a moving force. We willingly pay to be relieved of individual pain and immediate bodily embarrassments. We have not yet achieved such breadth of vision as to pay to be protected from that which threatens the social body, but may not come to us individually.

Thus medicine grew up and is to-day very largely a personal service. Each of you in a certain sense is going into business. You have something to sell. You will look for a market. You will sell to him who desires to buy. You will take your pay. You will sell to some who cannot pay; to some who will not pay. And just as in every other business, you will make those who do pay pay also in the long run for those who fail to pay. This is the rule of trade. It must be followed if you would succeed financially. It is the inevitable result of the individualistic position of medicine at the present day.

With the knowledge, however, of the nature and cause of disease acquired in the last half century, a change has begun whose effects are already plainly perceptible and whose eventual far-reaching results over your profession no one at present can foresee. We know now that disease is never wholly an individual matter. Some diseases are predominantly social. Consequently your relation as physician, to persons afflicted with these diseases must involve a relation to the whole social body. You cease to be merely a seller of merchandise. Your dealing is no longer exclusively with the individual. You become the servant of the whole people. Society already places explicit duties on you, and by implication requires many more. As time goes on it will demand still others. Medicine is losing its individualism. This you must recognize and you must adjust yourselves to the new condition. More than that, you must lead, if you are men worthy of these diplomas, you must lead society in the great movement to eliminate disease. You must become less and less the sellers of healing and more and more the captains of health. This means in the end a broader responsibility and a more dignified station. But meanwhile it means readjustment and possible hardship. How are you of the next generation of doctors going to face this great social movement? Are you going to sit back on the cushions of ancient privilege? Are you going to rest content on ideals of personal service? Or will you rise to the concept of higher duty? Surely these things are worthy your best thought as you enter and carry forward the work of your profession.

It is therefore not in any ordinary spirit of interest but rather with high inspiration that you are asked to consider more specifically, for these last few minutes, some of the movements and signs of the times.

THE PUBLIC HEALTH CAMPAIGN

First there is the wonderful and far-reaching activity known as public health or preventive medicine. This movement finds its scientific foundation in Pasteur's demonstration of the cause of disease and the nature of infection. It finds its mathematical verification in vital statistics. It finds its financial justification in the value of the human animal. But it finds its moral justification in the altruistic ideal of race welfare and community happiness.

It is hard to discuss this question without resort to statistics. We might show that the average length of human life in Europe has increased from eighteen or twenty years to over forty years. We might quote the death-rate in New York City as 36 per thousand in 1866 and 14 per thousand in 1913. We might estimate what this means to the wealth of the world, when considered "in conjunction with the simple proposition that *wealth is always and only the result of human labor.*"

On the other hand, we might point to the enormous work yet to be done. We might dwell on our national crime of 1,100 preventable deaths a day—fifty lives, perhaps a hundred, in this land of ours, snuffed needlessly out while we sit here during these exercises.

However, figures are dry; statistics do not comport well with commencement joys. I shall content

myself with authoritative quotations which ought to stimulate the thought and arouse the activity of every person present.

Says Disraeli:

The public health is the foundation on which reposes the happiness of the people and the power of the country. The care of the public health is the first duty of a statesman.

Says Pasteur:

It is within the power of man to make all the infectious diseases disappear from the world.

The significance of these statements for every man and every woman everywhere is easily appreciated. If there is such a thing as social consciousness, then each of us contributes to that consciousness. If there is such a thing as group activity, then each of us must either engage in that activity or act as a drag on social progress. If there is such a thing as group responsibility, then each one of us is responsible. Who shall doubt that there is such consciousness, such activity, such responsibility? Only he who denies absolutely the altruistic ideal. It behooves us, therefore, each and every one to study, endorse, support and actively engage in the public health campaign. If we do less we are false to our duty as men. This applies to all men. It applies particularly to physicians.

But wherein lies the special plea to the medical profession and to this graduating class? Exactly in this: The doctors must be the explorers and pioneers of this great movement for race betterment. This mission they are attempting in every way to accomplish. They *ought*, further, to be the active leaders of public sentiment, the molders of political action and the most scrupulous supporters of every legal regulation. Can the doctors qualify for the latter high offices? I regret to confess my belief that they cannot so qualify.

It is true that physicians as a whole give assent to the principles of preventive medicine. They endorse the health movement, although they know it means diminution of their business. Moreover, practically without exception, they practice those methods of routine in their professional work which are calculated in a measure to limit the spread of disease. Through their associations they carry on an active and valuable campaign of education, and assist in the indispensable political propaganda.

It is as individuals that they fail. And they fail because they still take the narrow individualistic view of their work. They get the patient so close to their eyes that they cannot see the public. They consider their trade and fail to recognize their profession. How many of them, for example, find it convenient to fail to report cases of infectious disease? How many connive at violation of quarantine? How many give weak support to public officials in health matters? I may be wrong in the impression that the number guilty of all these offenses is large. But I am not wrong in the observation that far too few physicians are accurately informed on matters of public health. Far too few are leaders of public sentiment. Far too few even make serious effort to educate their own patients in their public duties. Many valuable measures fail through the indifference of the profession. Many reforms are delayed for years because the doctors are afraid to be reformers. Moreover, one need not search far to discover evidences of active opposition. In England the medical association opposed to the last moment the great insurance act.

You may say that one should not expect the doctors to be different from other people when they see their business involved. But these are educated men and should be alive to the spirit of the times. Many of them are behaving at present much as did the spinners and weavers when power machinery was introduced. Surely the most highly trained profession should rise above the motives of ignorant workmen.

Says Macilwaine:

The overwhelming majority of the profession do not concern themselves with prevention.

Says Ditman:

Disease, crime, pauperism, insanity and preventable accidents are the foulest blots on the modern civilized state, and the responsibility for the amelioration of these curses must be faced on the last analysis by the medical profession.

You may point to the important accomplishments in sanitation and public hygiene, and claim the credit for the medical profession. I grant the importance of the achievements and acknowledge in large measure the justice of the claim. These accomplishments, however, involved for the most part, the control of matter and natural forces—what has aptly been termed the "non-human environment." They were largely engineering problems such as water-works, filtration plants, sewers and garbage incinerators. Or they involved control of lower forms of life such as mosquitoes, ticks and rats. The things that are to be done are vastly more difficult because they involve the human animal. Every step from now on must begin with a limitation of individual freedom and individual rights to property. Inherent and heedless egoism is the great barrier to progress in preventive medicine. Not bricks and cement, but human psychology is the material henceforth to be worked on in public health. Only by the painfully slow process of education can the altruistic motive gain ascendancy, and only as such ascendancy is gained will control of the preventable diseases be realized.

In this tremendous but not superhuman task of education the doctors must take the lead. And in proportion as they realize the task and work on it with all their strength, privately and collectively, with their patients as individuals and with the public at large, only thus will they realize the fulness of the term "doctor," which means primarily *one who teaches*. Remember this all ye physicians. And you who to-night receive your diplomas, whenever you look at those documents framed on your office walls, translate in your hearts the words *Medicinae Doctor* into "Teacher of Medicine," and exalt your profession thereby.

One might easily fill a longer time with the enticing theme of public health, but I desire only to hint at things which should stand in large outline as you begin your careers and leave to you to fill in the details. I pass to the related topic of social service.

SOCIAL SERVICE

This too is a pregnant subject. There is a little book by Richard Cabot which every one of you should read. The title is "Social Service and the Art of Healing." You should read that book, I repeat; and if for two years you have passed from clinic to clinic and have not learned how the problem of disease links up inevitably with the problem of poverty and the problem of crime and the problem of ignorance and the problem of heredity and all the other great socio-

logic problems—then, I say, you are already suffering from that medical blindness which Cabot so clearly portrays. He shows how even in the narrow duty of doing your best for the patient you must look at the background of social conditions. You must look back of the *patient* and see the *man*.

Somewhere else I have read how the physician's classification of diseases according to tissues or poisons or micro-organisms tends to blind the vision to the true causes lying back of all in social and industrial conditions. I need not give examples to prove to you that this statement is true, but I do wish to emphasize its importance. "It is quite clear," says one writer, "that, practically, the elucidation of antecedent conditions may often be vastly more important than the immediate and individual problem of diagnosis." Think of the absurdity of that procedure to which many have called attention, but which exists everywhere in public hospitals and private practice alike—I mean that procedure by which a patient, at large expense of money and effort, is brought to a condition of health and is then turned back into the environment which was the real cause of his disease. This procedure, narrow and unwise in the case of an adult who may be able in some cases to modify his environment, change his employment or his habits of living, becomes actually a social crime when the patient is a little child.

If you are to succeed in medicine even in the narrow individualistic measure which has constituted success in the past, you must cure people so that they will stay cured. Therefore, you must not fail to look at the social background. You must learn to deal with the whole man physically, environmentally, psychologically. You must become proficient in the "study of character under adversity and of the influences that mold it for good or ill;" and that, if we accept Cabot's definition, is to be a social worker. Moreover, you whose *chief* business, admittedly, is the diagnosis and treatment of the ills of the body, will join hands with that new expert who diagnoses and treats the ills of environment and of state. You will call on him for assistance as on any specialist. You will return service for service. You will pull your oar joyfully and manfully in that "team-work of doctor, educator and social worker," whose object is "the care of people in trouble."

This address might have been called "Cooperation in Medicine," because its central idea is to show that medicine like every other human activity tends toward collectivism, toward cooperation. The matters of public health and social service already discussed are two important cooperative enterprises in which I believe that every doctor should take active part. I come now to cooperation in a narrower sense, namely, union of effort to care rightly for the individual patient. This union of effort takes two distinct forms. First, the joining of individuals into a group to care for the ills of the members of the group. Second, the joining of doctors in order the better to care for their patients. Under the first head are included various charities, the fraternal lodges, various forms of insurance societies and companies, industrial concerns and the state or municipality itself, in so far as this largest group makes medical provision for its members. Here we have a complicated and difficult matter; a matter of ever-growing importance, which may change absolutely the social status of medical practice; yet a matter on which medical men are prone to take wrong or at least narrow views. The phrases "contract practice," "company doctor," "sickness insurance" are terms of opprobrium to most of the medical profession; yet the facts and the logic of these facts are simple. You should face them, think them out, adjust your lives to them.

As to the facts: there is first the "submerged tenth" of the population, whose income is always too small for the imperative necessities of proper food, clothing and shelter. When they are sick, they are "down and out." They cannot possibly care for themselves, to say nothing of paying a physician. They must be dependent on some form of assistance or die. Humanity revolts at the latter alternative. Moreover, we are learning that the menace of disease spreads ever from the lowest to the highest orders of society. Organized charity and the state itself, therefore, give freely and largely for this class of unfortunates. Public and charity hospitals and dispensaries are maintained on ever-enlarging plans of material equipment and professional efficiency. The doctors give freely of medical service and administrative knowledge. The very poor in many cities get as good medical service as the rich. On the whole, the lack of inclination and power on the part of society to deal effectively with the underlying and responsible social conditions is the hard and almost hopeless problem as regards the submerged poverty-stricken portion of the population.

But now we come to a second great group of people, composed chiefly of wage earners whose income, so long as they remain in health and have work, is sufficient for the needs of themselves and of those dependent on them. Here are classed the great body of self-respecting laborers and artisans. They are in no sense dependent; on the other hand, they are the backbone of industrialism. It is before the member of this group that ever hangs the imminent possibility that when he gets sick, he first of all will lose his job and secondly will be expected to support his family and pay the doctor. Even in good times and good health many fail to keep more than head and shoulders above water. Illness or non-employment means inevitable submersion. It means drowning unless some form of life preserver is thrown out. Now what is more natural than that this life-preserver should be provided through the cooperative effort of a group, or through the cooperative effort of industry or through the cooperative effort of society as a whole? The first means the lodge or union. The second means the company physician or industrial medical organization. The third means governmental insurance or state medicine.

You have to regard the situation in one of two ways. If your point of view is narrowly individualistic, you may say that the laboring man must maintain himself and bear alone the exigencies of industrial depression, the chance of disease or accident and the inevitable incidence of age. You say, perhaps, that the public is not concerned except to care for the absolutely helpless and the hopelessly indigent. If this is your point of view—and it is a very common one—then the least that you can do is to face the responsibility which your scheme of society involves. You must recognize that your plan must force over the line into the submerged portion of the population many an individual and many a family on whom come, through no fault, perhaps, of themselves, the curse of non-employment, accident or disease. And you must face the fact and the responsibility for the fact that every man so forced over the line into dependence

loses something of incentive to labor, something of manhood, something of self-respect. In losing these, his regard for society and law must diminish and his inclination toward parasitic existence must increase. When you consider that sixty-two out of a hundred persons seeking aid from a destitution agency were driven there by illness, you begin to comprehend how serious is your responsibility as medical men if you insist on the individualistic scheme of social organization.

The other point of view is altruistic or, if you prefer, collectivistic. It says that the social order (widely or narrowly considered), is responsible for those accidents which we call sickness and lack of employment. It looks on disease and old age exactly as we have all come to look on fire and burglary and the hazards of the sea. It says that society should carry the burden of all these exigencies. The individual should not be released, but he should bear only his share of the load. All this broadly considered is insurance. It may be government insurance, paid for by taxation, such as the protection afforded by the army, the police, the fire department. It may be corporation insurance as our ordinary types of life, fire and tornado protection. It may be cooperative insurance as in fraternal orders and friendly societies. Whatever its form, the philosophy of insurance is that each participant contributes in proportion to his share of the risk. Not all receive back what they put in. Of a thousand houses insured we expect only a few to burn. But the man whose home does burn receives a much larger sum than he paid in. He receives it gladly and with no stigma of dependence, as would be the case if his friends took up a collection to pay for his house. Surely this form of protection should apply as usefully and properly in meeting the exigencies of accident or disease as those of fire or theft.

Now the medical profession does not object to insurance. Indeed, it approves very heartily when the life insurance comes in at just the right time to liquidate the deceased patient's bill. It highly approves of insurance against malpractice and against automobile injuries. But when insurance attempts to provide medical attendance for a group of poor workingmen, the medical profession is inclined to exclaim in holy horror against the invasion of its ancient prerogatives. It holds up its time-stained right of fee as a banner more esteemed (for the moment) than the noble right of service. It says: "These men pay only fifty cents a month. Do you think we will give any one medical service for fifty cents?" It loses sight of the analogy of the many houses that never burn, but whose owners through insurance pay for the loss of the one that does burn. It loses sight of its own manifold losses from persons who cannot or do not pay. It loses sight of the advantage, even to a doctor, of a fixed income. It fails lamentably to look at the greater good, which is the public good.

With this attitude of many of the medical profession I have little patience nor will the public long have patience. I will grant that many of the schemes proposed have been chimerical; some of them, fraudulent. Most of their promoters have aimed at cheap medical service, not efficient medical service. I will grant and I will work for the proposition that the medical profession should be properly compensated and that matters should be so arranged that the patient shall have free choice of doctors. I will grant the advantage of such elements of competition in medical practice as tend to develop the best service. But granting all these things and balancing these and the other valid objections against invalidity insurance over against the good which would come from a thorough-going system, I find the scale coming down heavily on the side of the latter; and I am sure that the same conclusion will be reached by most, if not all, physicians who open-mindedly study the working of the insurance laws in Germany, Denmark and Great Britain. The objections of the British Association have not been warranted, for the brief experience with the new law shows that the compensation of the profession has been appreciably increased.

This question has not assumed large proportions in this country, but I am certain that it will do so in the not distant future. It is manifestly impossible to discuss it adequately on this occasion. It will demand the highest wisdom to secure a system adapted to our peculiar conditions. Like all the other topics which I have touched on, I bring this before you for thoughtful study as you go about the practice of your profession.

The second form of cooperation for the care of the individual patient which I mentioned was that of the doctors themselves. Of course the consultation is a long-established attempt at such cooperation; but that its usefulness is very limited, as ordinarily carried on, there can be no doubt. Whatever good there may be in consultation (except in hospitals), has accrued almost exclusively to the wealthy patient. Surely medicine will never be rightly adjusted in the social order until every man, woman and child is entitled to receive and actually does receive the best oversight and treatment that science is able to afford. This is not the case at the present time.

There are various reasons for this condition. One of the most potent is the ever-widening specialism in medicine. Of the inevitable necessity of this movement there can be doubt. No one can hope to compass the tremendous volume of medical fact or become proficient in all the valuable diagnostic, therapeutic and operative procedures. Specialism in any line of endeavor, whether medical or otherwise, tends to narrow the field of activity and of vision. Concentration increases intensity at the expense of distribution. It acts in human activity exactly as in the electrical transformer: if you increase the voltage, you decrease the amperage. The practical point is that for certain patients the work of several experts is necessary, if the best results are to be obtained. How well has medical practice succeeded in adjusting itself to secure these benefits for the individual case? In my judgment it has not succeeded. It is true that in the best charity hospitals the very poor individual receives the services of all the necessary specialists and all the modern appliances. For the small group who can pay large fees, there is possibility of getting what is needed by reference from specialist to specialist and the paying of separate fees for each element of service. The doctors may think that this procedure works well. In my opinion it does not work well even for the doctors, taking their interests broadly; and from the patient's point of view it is subject to the criticism that they interpret the multiplicity of fees as repeated payments for a single service. They look on specialism as a new device for padding their pocket-books. But the fatal fallacy of the present arrangement is its inapplicability to the great class of independent poor, who cannot by any possibility meet the repeated

demands for even moderate fees. They simply go without the service; and of course, the doctors cannot render it.

Now it seems to me that a hopeful movement toward the solution of this difficult problem is found in those combinations of experts, however arranged, by which the sick man becomes the patient of the group, which renders the service needed for a single charge. The system and efficiency secured by these organizations are almost uniformly admitted. You may criticize the scheme as destroying the individuality of the doctor's work. I cannot see that it does; but even if this were true, I believe that something better, namely, an improved service, is substituted. You may make the charge that these institutions tend to commercialize medicine. Again I cannot see your ground for argument. I believe, on the contrary, that their organized systems of arranging compensation are more just than the haphazard methods of the ordinary practitioner. If the system of fee, that is, of charge proportionate to the financial ability of the patient, is in any way or anywhere defensible, then these organizations certainly administer the system with as full regard to the means of the individual patient as do medical men who work as separate units.

But let us throw to one side these more or less specious and minor criticisms and ask whether the examples of medical cooperation meet a social need? Do they bring to the individual patient what he ought to be entitled to, namely, all the expert service that his case demands? Do they accomplish this end better for the average patient, all things considered, than the same experts would do working separately? If so, common sense must justify this departure from time-honored (which often means worm-eaten), custom. However, as with all other problems which I have discussed, I do not ask you to accept my views in regard to this question. I ask you first to recognize the problem. But I ask you to do more than recognize. I ask you to study it in the light of the broadest spirit and fullest knowledge attainable.

There are various further topics that I had hoped to bring to your attention. There is the suggestion of regular medical examinations for persons in health, a problem which some of the life insurance companies are experimenting with.

The army of the pick and shovel, of the saw and trowel, far overshadows in its importance to the nation the army of the rifle and sword. Yet the latter army takes every precaution through its medical organization to keep the individual soldiers at the highest point of efficiency, while the great army of industry moves forward with the savage individualism of the hoards of Attila. Medical science so far has been content to follow in the rear and pick up the wounded. Should it not go in advance as did the medical officers of the army of Japan? We all know that the true function of medicine should be to keep people well. They should be regularly watched for evidence of disease and given timely advice and treatment. We know how present economic conditions, medical ideals and popular psychology tend actually away from rather than toward the proper relation of medical science to the social body. We read Samuel Hopkins Adams' interesting story of the "Health Master" and are filled with regret that only in fiction is such a character to be found. It is a hopeful sign, however, that people are beginning to think of these things.

This topic I pass with a word. Others as important I omit altogether. I have said enough to fulfil my intent, which was to show that there are many things concerning which you must "learn what is true in order to do what is right." You are going forth to work. Twenty, thirty, perhaps forty years of active service stretch out in front. At the end, what? Will you be like Sylvius?—a great physician, but one whose epitaph is the epitome of self-centered existence.

> Here lies Sylvius who never did anything unless he was paid for it. If he could do it, he would charge you for reading these lines.

No, I cannot think of you as like Sylvius. You are forward-looking men, alive with the spirit of the times, kindled with altruistic enthusiasm. You know that there is something to your profession and something possible to your lives, besides appendicitis and typhoid and pneumonia; something besides office hours and calls and long rides over country roads; something besides bills receivable and bills payable; something besides the individual patient with his idiosyncrasies and his pains. There is world interest; there is world importance. There is room for the scientist's logic, the soldier's heroism, the stateman's wisdom, the reformer's fervor, the poet's imagination. There is room for much living and much thinking. The world with all the centuries wrinkling its forehead; humanity with its accumulated accomplishments; art with its visions of ecstasy and beauty; science with its hard-worn hoards of learning; all are as new to you as the flowers of Eden were to Father Adam. Go forth and strive. There is

> Something hidden. Go and find it. Go and look behind the Ranges,
> Something lost behind the Ranges. Lost and waiting for you. Go.

THE NEGLECT TO PROVIDE FOR THE INFANT IN THE ANTITUBERCULOSIS PROGRAM

ALFRED F. HESS, M.D.
NEW YORK

In the warfare against tuberculosis we should consider ourselves particularly fortunate in possessing full knowledge of the cause of the disease which we have to combat and a fairly complete knowledge of its mode of transmission. Probably the greatest advance which has been accomplished in this field during the past few years has been our clearer conception in regard to the time of life when infection takes place—the realization that tuberculosis is contracted to a large extent in early childhood. This brief report is written from this point of view, with the purpose of raising the question whether we are making use of this new knowledge—whether our methods of prophylaxis have advanced or have been reconstructed to harmonize with it. We know not only that infection occurs during early childhood, but that it occurs frequently in infancy, and that the younger the child the graver the prognosis of the disease; infants infected when under 1 year of age rarely recover, and those between the ages of 1 and 2 years have a very poor outlook for life. With these statements as a preface—facts which now constitute every-day medical knowledge—we may well inquire what is being done in the antituberculosis campaign to

prevent infection at a time of life when it not only occurs frequently, but runs so grave a course? What measures have been added to the sanatorium treatment, to the provisions for home care, or what new organized effort has been launched, which promises to safeguard our infants against tuberculous infection?

This question recently has presented itself for solution under the following circumstances. At the Tuberculosis Preventorium for Children at Farmingdale, N. J., two hundred children are cared for, who give a positive tuberculin reaction, but show no clinical signs of tuberculosis. They range in age from 4 to 14 years, and are selected by the tuberculosis dispensaries of New York City from households in which some member of the family is tuberculous, frequently suffering from open tuberculosis. These two hundred children, at the present time, happen to represent 120 families, as, in many instances there are several from one and the same family. A chance occurrence, the visit to the preventorium of a sickly tuberculous mother carrying her infant in her arms, suggested that it would be of interest to inquire how many more infants under the age of 2 years there were in the 120 homes of the children at present in the institution. It was a simple matter to secure this information. Not only did we have the data on the admission-cards, but we could question the children themselves. By this means we were able to obtain far more accurate information than if we had undertaken a larger investigation embracing children no longer in the institution.

The result of our inquiry showed that *there were forty-two infants under 2 years of age in these 120 homes.* A most startling situation! The accompanying table gives a summarized picture of the individual families. From this table it will be seen that in very many cases there is more than one member in the home suffering from tuberculosis; that frequently the tuberculous disease is in the second stage; that in many families there are two infants exposed to infection; that even when the tuberculous individual has left the home for a sanatorium, this removal has occurred so recently that the infants have been exposed for many months; that the number of children in these families is unusually large, averaging somewhat over five to a family.

It is apparent that this investigation portrays a very serious condition of affairs, and that unless some protective measure is taken, these infants are doomed to tuberculosis, leading to illness, to the dissemination of infection, and to death. What shall be done in the matter? How shall we protect them and the community? The first relief measure which suggests itself, probably, is to send the tuberculous mother or father to a sanatorium. We find in practice, however, that it is feasible in only a few cases to safeguard the home by sending away the tuberculous member of the family. The mother cannot be spared from the household, for the very reason that she has the infant to care for, as well as because there are usually other children. (It will be noted that the mother constitutes the tuberculous member in over one-half of our cases). The father, although tuberculous, is still in many instances an important source of income for the family; he cannot desert them. There is therefore the necessity, in a large proportion of the cases, of focusing our efforts in another direction, of striving to send the infant out of harm's way. A few who are orphans or half orphans can be committed to orphan asylums; a few others, provided the breadwinner is ill, may be looked after by some existing child-caring institution. If, however, the family is not destitute, if there is a source of income sufficient to keep it afloat, it will be difficult to place the child in an institution. The babies' hospitals can offer no refuge; they must refuse to fill their beds with infants who are not sick. At a loss how to solve the problem, and feeling that there might

DATA OF THE 42 INFANTS IN THE HOMES OF CHILDREN NOW AT THE PREVENTORIUM

Case No.	Initials of Child	Age in Years	No. Children in Family	Tuberculous Members	Stage of their Disease	Location, Etc.
1	G. B.	1	8	Father	2	In sanatorium 2 months
2	G. B.	2	..	.....	..	.....
3	W. B.	1	8	Brother-in-law	2	Home
4	I. C.	6/12	7	Mother	2	Home
				Father	2	Home
				Sister	2	Sanatorium
5	H. C.	1½	5	Sister	2	Home
6	B. C.	1	3	Mother	1	Home
7	G. D.	10/12	4	Father	2	Sanatorium 4 mos.
				Mother	2	Sanatorium 7 mos.
8	B. D.	2	6	Father	2	Home
9	H. G.	2	3	Mother	1	Home
10	L. G.	2	5	Father	?	California
11	I. G.	2	7	Aunt	1	Home
12	P. G.	2	7	Mother	1	Home
				Brother	1	Home
13	H. G.	1/12	5	Father	1	Home
				Mother	1	Home
14	H. G.	2/12	7	Mother	1	Home. Children mentally deficient
15	B. J.	2	7	Father	2	Home
16	B. J.	Newborn	..	.....	..	.....
17	B. K.	2	6	Mother	2	Home
18	B. K.	5/12	..	.....	..	.....
19	W. K.	3/12	5	Father	2	Home
20	C. L.	2	4	Father	2	Sanatorium 2 mos.
				Mother	1	Home (pregnant)
				Sister	1	Home
21	B. M.	9/12	5	Father	1	Home
				Brother	1	Home
22	B. M.	1½	9	Mother	1	Home
23	B. M.	1½	..	.....	..	.....
24	B. M.	5/12	..	.....	..	.....
25	L. M.	2	6	Mother	1	Home
26	....	1/12	..	.....	..	.....
27	L. P.	1¼	3	Father	2	Home
				Sister	1	Home
28	S. R.	2	4	Father	1	Home
29	S. R.	8/12	..	Mother	1	Home. Four children died
30	F. R.	1 1/12	3	Mother	2	Home
31	F. R.	3/12	..	Father	1	Home
32	P. S.	1 5/12	6	.....	..	An arrested case
33	E. S.	2	5	Father	3	In sanatorium?
34	R. S.	2	4	Mother	1	Home
35	R. S.	1	..	.....	..	.....
36	M. S.	1½	4	Father	1	Home
				Mother	1	Home. Do not care to be burdened with children
37	J. S.	2	3	Father	..	Died of tuberculosis at home year ago
38	H. S.	1	3	Mother	2	Home. Cannot leave on acct. of infant
39	M. S.	9/12	5	Mother	1	Home
40	F. W.	2/12	4	Mother	2	Home
41	M. S.	9/12	5	Mother	1	Home
42	J. S.	1½	3	Father	2	Home

be some unexplored avenue of escape, I appealed to the Commissioner of Public Charities, Mr. John Kingsbury, for advice. He answered in the main as follows: "In so far as I have been able to gather, and I have caused diligent inquiry to be made, at the present time we have no agency or institution in this city equipped to care for the particular class of children you describe."

In order to have the question concretely in view, it may be well to cite a case in point. Let us examine

more fully the instance which we referred to above, and which led to this investigation:

Family H. S. There are two children at the preventorium for the past three months who are doing very well. The father appears to be in moderately good health and earns $10 a week. The mother looks weak and sick and has tuberculosis in the second stage. On being asked why she did not enter a sanatorium, she replied that she could not leave home on account of her 15-months-old baby, which she was carrying in her arms. Further questioning elicited the fact that she had been well until this last child was born, and had weighed about 135 pounds; that since this time she had failed and now weighed about 100 pounds. The recency of active tuberculosis in her case probably explains how it came about that the two older children did not succumb to infection in infancy. This infant evidently could not be sent to a hospital or to an orphan asylum; at best it could be referred to some other institution for a short period. In order to provide for this emergency, we at once admitted the infant to the preventorium. This provision enabled the mother to leave her home and to enter Sea View Hospital a few days later.

It would seem that we have here encountered a weak link, not only in the antituberculosis movement, but in the infant welfare work as well — for these two fields of effort overlap or rather dovetail at this point. Unless infection of young children is adequately guarded against, what basis is there for any hope of eradicating tuberculosis in succeeding generations? Many of these infants will die; others will live to constitute a large proportion of the patients who are destined to waste away in their homes or to fill the preventoriums and the sanatoriums in the generation about to come. How then are we to provide for these infants? The suggestion to protect them in institutions is rejected as impracticable; it is argued that mothers will not part with their healthy infants, and that we cannot exercise coercion. Although this contention has from time to time been made, I know of no experience to substantiate it. In view of the seriousness of the situation, of the thousands of infants who must be exposed to infection in the city of New York, it would seem worth while to ascertain, by means of a vigorous experiment, whether tuberculous parents will give their children up to institutional care. I believe there is a considerable number who will be sufficiently wise to make this sacrifice when the danger lurking in a tuberculous home is adequately explained. The weak and sickly mother suffering from tuberculosis will be particularly inclined to temporarily renounce her infant, and it is in her case that a separation is most urgently demanded. *Tuberculosis preventoriums for infants should be established.*

To make a beginning in this direction it may be advisable to assign wards for this purpose in existing institutions (infant asylums, preventoriums or sanatoriums) rather than to establish new institutions. In this way it would be feasible to have, in many instances, infant and parent in the same institution. These infants need not be sent to the country, to be treated by means of a rigorous fresh air régime; they may be adequately cared for in or near the city, where their parents have the opportunity of visiting them from time to time. Preference might be given at the outset to urgent cases, to infants surrounded by open tuberculosis, to cases in which a tuberculous mother is constrained to remain at home in order to care for her infant, or in which there are two or more members of the family suffering from tuberculosis. The minimum length of stay may be fixed provisionally at one or two years.[1] The details of organization, however, cannot be formulated in advance. The object of this paper is rather to urge those engaged in tuberculosis work, as well as those active in the field of infant welfare, to make some provision for a large number of infants who are now abandoned to their fates, destined to die or to swell the ranks of the tuberculous poor in the coming generations.

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THE HEART IN THE ACUTE INFECTIONS *

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More and more generally is the fact being realized that the heart suffers in greater or less degree in every acute systemic infection. We may safely go further and state that there probably occurs no instance of perfect cardiac recovery from an acute micro-organismal invasion. This must not be taken to mean that there are no clinical recoveries from the cardiac complications of the acute infections. It does indicate, however, that a scar results from every attack on the cardiac musculature and on the endocardium and pericardium, and that cardiac scars spell weakness, not strength.

Not infrequently, especially in the acute diphtheritic involvements, the pulse will become mean and thready, cyanosis is extreme, sweating profuse, nausea and vomiting appear, the blood-pressure (systolic as well as diastolic) falls, and the patient may die with all the phenomena of shock. Such a patient dies primarily from structural damage to the cardiac mechanism, due to the toxin circulating in the blood. McCallum[1] has shown that there are other factors at work, also, since the insufficient heart may be revived even after the death of the patient, and resume its function for a time. But the microscope reveals lesions amply sufficient to account for every failure in the performance of duty.

It is well to remind ourselves that in certain instances of clinical recovery the heart not only fails to regain its full integrity, but dates its first clinical insufficiency from the acute systemic attack. The picture may be classified as the debility of convalescence, or as a postfebrile anemic state, or what not. The important point is that too seldom is the condition recognized as a real loss and lack of ability to maintain cardiac muscular tone.

Probably all of the acute infections are microorganismal, if not bacterial in origin. Even syphilis may now be classed within such a category. Rheumatism also seems ready to fall in line, perhaps as a genuine streptococcemia, possibly as a symptom-complex variably dependent on now one, now another causal germ. The pneumonias acknowledge no one bacterium as their invariable underlying factor. Tuberculosis, like influenza, almost always appears as a mixed infection. Measles, small-pox and scarlatina

1. In many instances it will be found that the problem of infection in the home has solved itself in the course of a shorter period, the tuberculous member having died or entered a sanatorium, or the disease having become arrested.

* Read at the annual meeting of the Pennsylvania State Medical Society, Pittsburgh, September, 1914.

1. MacCallum, W. G.: Am. Jour. Med. Sc., 1914, cxlvii, 37.

appear to be drifting, more by dint of fashionable tendency than by reason of any definite demonstration, into the streptococcic fold. Only diphtheria, typhoid fever and syphilis—already mentioned—furnish clinical cardiac conditions distinctive, even in a measure, of a definitely recognized organism and demonstrably characteristic lesions.

Roughly speaking, we may generalize or group the harmful effects of the active agents in all of the acute diseases into those of (1) acute true myocarditis, (2) myocardial atony due to degenerative change, (3) toxic paralysis or paresis of the cardiac muscle and nerve fibers, (4) endocarditis (valvular and mural), (5) simple and mediastinopericarditis, and (6) muscular and valvular insufficiencies with dilatation of the cardiac chambers.

I make no reference here to the sclerotic changes that may or may not have had their beginnings in an infectious thrombo-arteritis of the vasa vasorum during the acute disease. Nor may we stop to consider the many post-convalescence developments that may easily be traced back to the acute infection of weeks or months previous. I shall not even dwell on the central involvement of the vasomotor system, the importance of which has, until the recent reaction, been exaggerated beyond all warrant. I have shown in another place[2] that in the pneumonias, at least, the diastolic blood-pressure (the best index of vasomotor tone) maintains a fairly normal level. Schwarzmann[3] has recently come to similar conclusions with respect to eighty cases of the various acute infectious diseases.

ACUTE TRUE MYOCARDITIS

True inflammatory involvement of the myocardium varies in type and extent in the acute infectious diseases from the simplest edematous infiltration or localized round-cell infiltration to the characteristic nodules of Aschoff, found in the hearts of subjects suffering from genuine rheumatism and chorea. There may be evidences in the myocardium of attacks antedating that which proves fatal, such as areas of old fibrous tissue, side by side with new inflammatory processes, or such as the scars and fibrous patches representing healed Aschoff's bodies, accompanying newly formed and typical giant-cell colonies. If the heart has previously been free from disease, the musculature of the left ventricle is most likely to suffer. It may, however, be the right ventricle wall, or the muscular ring supporting the aortic and mitral valves, or the atrioventricular bundle, or that less commonly known tract of transmitting fibers described by Kent as existing in the right lateral cardiac wall. Here, there, or everywhere the lightning may strike and leave its fingermark.

The vital point to which I would here call attention is that whether the infection be a pneumonia, a gonococcemia, a rheumatism (so-called), an invasion by the *Streptococcus mitis* (*viridans*), or by the homely staphylococcus, if it becomes general and severe, the cardiac musculature invariably suffers and the microscope will reveal lesions competent to explain many features of the clinical picture. Once this fact is appreciated as a general principle, we shall cease emphasizing the all-importance of a loss of vasomotor tone, especially since, as in most pneumonias, the vasomotor tone is not low. Moreover, we shall be more likely from the beginning to watch intelligently and closely for the early signs of cardiac irritability, and later for indications of cardiac distress. A weak, irregular pulse, air hunger, pain that cannot be definitely attributed to pericarditis, precordial oppression, will all have a new significance when we realize that the main lesion even in rheumatism is of the myocardium, not of the valves, and is just as likely to be permanent as if it were valvular.

Acute syphilis is as likely to cripple the myocardium as the valvular structures, and to leave unmistakable evidence of the nature of the process in the presence of the spirochete. The changes may be interstitial or parenchymatous or both, and may vary in grade from an edema to fatty degeneration. Except in the late fibroid lesions the spirochete will usually be found. Very rarely does the heart of syphilis escape being the heart of myocardial disease.

In a brief paper it is manifestly impossible to cover thoroughly the ground suggested by the myocarditis of acute infectious disease. One can, however, and should have instantly brought to mind, when diphtheria presents itself, the fatty degeneration of the fibers and the paralysis of the cardiac nervous mechanism, even more vividly than the localization of the membrane in the pharynx, larynx and nose. In typhoid fever the hyalin or waxy degeneration (Zenker) of the fibers is not to be forgotten. In the pneumonias, I have elsewhere shown that we may confidently expect any or every grade of degenerative change. In influenza many patients die in their convalescence as the result of fatty myocardial change. In true rheumatism we find not only any or all of the changes mentioned above, but in addition the suggestive, if not pathognomonic nodules of Aschoff in and around the adventitia of the small subendocardial vessels, in the interstitial substance between the fibers, even in the valve structures themselves.

I have seen two instances of suppurative involvement of the cardiac muscle, both in cases of pyemia, the one an example of extensive suppurative myocarditis, and the other of multiple abscesses of the heart wall. Cases of this sort are always fatal, and are diagnosed by generalization only, or on the necropsy table.

Whether full cardiac recovery follows even the milder grades of infectious inflammation, and whether a heart so involved is ever again quite ready to perform full service, I think we may, on the basis of the foregoing, very well doubt. For ordinary purposes it may answer every need. When the stress comes, just as during the primary acute illness, it may be taxed just a little beyond its capability, even though well within normal limits, and fail the patient at a time in which he needs every reserve force and energy. In the form of atrophied or degenerated fibers or localized areas of fibrosis the heart may preserve its record of the storm. Many a physician has experienced a severe clinical lesson in the loss of a patient owing to sudden cardiac failure when convalescence has seemed almost or quite complete, even when the primary disease has been not oversevere. Weill and Mouriquand[4] have reported a series of such instances in convalescents from scarlatina. In one case, a girl of 15 years died suddenly at stool. Another child, an infant of 18 months, died suddenly when it seemed past all need for worry. The microscope

2. Willson, Robert N.: The Heart in the Pneumonias, THE JOURNAL A. M. A., Sept. 19, 1914, p. 981.
3. Schwarzmann: Centralbl. f. inn. Med., Aug. 1, 1914.
4. Weill and Mouriquand: Presse méd., Aug. 5, 1911.

revealed an acute myocardial inflammation as the cause of the fatality. Far more frequently does diphtheria cause such an end.

It would seem, then, that the heart muscle is of primary interest in the acute infectious diseases, and deserving of more than ordinary concern.

MYOCARDIAL ATONY DUE TO DEGENERATIVE CHANGE

The various forms of degeneration noted in the myocardium of infectious disease have already been briefly mentioned. They all lead to some measure of disability and incompetence, mainly as a consequence of a loss of muscular tone. This quality or function of being fit, or, to use athletic parlance, "on one's toes," is as essential to cardiac equilibrium as it is to the performance of a person's daily work. If he possesses that indescribable something which insures his mental and physical grasp of things, the vital tension that furnishes both energy and endurance, he enjoys the tasks of the day. He is a giant and they are the duties of a Lilliputian. Exactly so with the cardiac muscle. If tone is lacking, every emergency is a new burden. We must not forget, moreover, that the arterial system is simply a continuation of the structural architecture of the heart. That which lowers cardiac muscular tone is almost certain to have the same influence on the muscle fibers in the walls of the arteries and veins.

Each step toward myocardial degeneration, cloudy swelling, hypertrophy, perhaps at its side atrophy of the fibers, fatty change, hyalin metamorphosis, replacement fibrosis, calcification—all of these represent incapacity through inability to sustain tone. In addition there is likely to be a diminished supply of an infected and chemically altered blood. It is little wonder that tone and accomplishment are both impossible under these conditions.

TOXIC PARALYSIS OR PARESIS OF THE CARDIAC MUSCLE AND NERVE FIBERS

There are many indications that either or both the vagus and the sympathetic cardiac systems of nerves may be embarrassed or completely paralyzed by the toxins of the acute infectious diseases. It is well known that drugs that ordinarily affect and stimulate the vagus branches to the heart fail to exert their usual influence under the shadow of an active toxemia. Physiologic conditions are abnormal. More and more frequent are the reported instances of so-called functional heart-block in pneumonia, in rheumatism, in syphilis, and in other acute toxemias. In some of these instances the lesion has been shown to be a round-cell infiltration of the auriculoventricular connecting fibers.

As long ago as 1905 Mackenzie[5] called attention to the occurrence of partial heart-block in influenza. In other temporary cases in which there has been clinical recovery, the disturbing influence has appeared to be wholly toxic, and has seemingly been exerted through both the muscular and the nervous tissues. In one of Routier's rheumatism cases[6], recently reported, a heart-block disappeared under the influence of atropin; in a second case, one of pneumonia, without treatment. In a case of heart-block in rheumatism reported by Gosse,[7] the loss of function persisted, in spite of treatment, for eighteen days. Occasionally temporary heart-block is noted in a case which at length comes to necropsy, when there appears to be an entire absence of explanatory and causative lesion. It would seem, however, that a more diligent search might discover evidences that escape the ordinary observer.

Auricular fibrillation and flutter are not rare phenomena in the toxic heart. While not essentially toxic disturbances, as is demonstrated by their appearance in a dying (normal) heart after removal from the laboratory animal's body, there is no question that the toxins of the acute infectious diseases may and do bring the same conditions to pass. Sutherland[8] has just published an interesting study of auricular flutter in acute rheumatic carditis, and of the clinical signs indicating the presence of this condition.

ENDOCARDITIS (VALVULAR AND MURAL)

Rheumatism (tonsillitis, arthritis, chorea) and syphilis are recognized as the two most frequent causes of valvular heart disease. We are, however, just now in the transition stage with respect to the meaning of "rheumatism," and its relation to the streptococcus in general, to the *Streptococcus viridans* in particular, and to many other forms of subacute and acute bacterial endocarditis. Typhoid fever, pneumonia, influenza, diphtheria, tuberculosis, occasionally involve the valves, but show a marked predilection for the myocardium. Scarlatina very frequently is found to have antedated a valve lesion that appears to have no other explanation. If scarlatina is finally pigeonholed in the category of streptococcic infections, we shall have the needed explanation for this probable etiologic sequence.

We seem bound in the near future to discard the term "rheumatism." Certainly no one has the unscientific privilege of believing, and still less of asserting, as did one critic who wrote to me recently of a number of cases of valvular disease with an entire absence of rheumatic history (arthritis, sore throat, tonsillitis or chorea), "Your cases were rheumatic, I believe,"—I repeat, no one has the privilege of throwing every etiologically obscure case of valvular disease into the rheumatic dump-heap, at least until the pale spirochete has been proved absent, and probably not then. We can and should catalogue the myocardial as well as the valvular lesions that have heretofore been ascribed to "rheumatism" under their proper etiologic classification. Whether or not we shall eventually limit the meaning of the term "rheumatism" to hearts showing Aschoff's nodules remains to be determined. Acute syphilitic lesions of the valves or of the myocardium may, indeed, often be diagnosed by the presence of the *Spirochaeta pallida*. In old and chronic lesions this diagnostic help may not be afforded. The etiologic significance of the other acute infections mentioned above can be ascertained only by a careful clinical following of the heart during the acute attack, and by a comparison with its known previous state.

Whatever the causal factor in a given infectious disease, the endocardial lesion follows one of two or three lines. Either it begins and persists as an inflammatory change in which fibrosis is the ultimate outcome; or vegetative deposits and growths appear; or, finally, the vegetative and ulcerative processes of malignant endocarditis manifest themselves. Any one

5. Mackenzie: Brit. Med. Jour., 1905, pp. 519, 587, 702, 759, 812.
6. Routier: Arch. d. mal. du cœur, May, 1914.
7. Gosse: Brit. Med. Jour., June 20, 1914.
8. Sutherland: Brit. Jour. Child. Dis., August, 1914.

of the infections may initiate any of the three types of mural or valvular endocarditis, sclerotic, vegetative or ulcerative. Rheumatism and the typically acute diseases (except gonococcemia) tend to the production of the vegetative, recurrent type. Syphilis, on the other hand, leans toward sclerosis from its beginning to its final deformity. More and more clinicians are to be found who believe that in the absence of a known causative factor a valvular lesion of either of the two more chronic types should be suspected of being syphilitic until proved due to some other etiologic influence. In the presence of fibrous arteries in a young person the presumption becomes almost a certainty.

The endocardial lesion may consist of a filmy lymph deposit on the line of junction of the cusps; or it may result in the stoppage of the passageway by a projecting mass; or the cusps may be shriveled and warped and noduled out of shape and position; or, finally, ulcerative processes may have eaten their way through. Endocarditis may thus constitute a mere baptism, or it may mean a destructive involvement that stops short only when the tissues are consumed.

PERICARDITIS

As the pericardium enjoys the same general blood-supply as the myocardium and the valves, there is little chance of its escaping involvement by any and every infectious process that is blood-borne. Many writers and teachers are skeptical regarding the occurrence of a primary pericarditis. None questions the frequency of the toxemic or of the bacteriemic forms. Indeed, contiguity to the pleura as well as to the myocardium would almost render a primary form of pericarditis unnecessary to explain the origin of the vast majority of instances. Conditions are so favorable to a direct extension of an inflammatory process from one structure to another that this would seem the natural order of events. As a matter of fact, it is an exceptional case of fatality from the acute infectious diseases that fails to show at the necropsy definite evidence of pericardial inflammation. Often a mere fibrinous patch, more frequently also an excess of pericardial fluid, rarely a purulent effusion, it would be almost an anomaly were the pericardium to be found free, when the structures so intimately associated with it are involved.

Pericarditis occurs in children at an early age. Blechmann[9], in studying 500 cases of pericarditis in the London Hospitals, found that 25 per cent. of all occurred earlier than the fifth year, and 50 per cent. before the fifteenth year. The toxemias in rheumatism and in the pneumonias are the most frequent causes, though all of the eruptive diseases contribute to the total. Heretofore rheumatism has been cited as the infection most active in the causation of pericarditis. When, however, we finally learn to discriminate between true rheumatism and other septic arthritides—when, indeed, we discover just what true rheumatism is—we shall probably find that it is not the cause of many cases that have been included under its name. In a series of sixty-seven cases of serofibrinous pericarditis in the University and Bellevue Hospital, Brooks[10] found twenty-six secondary to pneumonia, which led the field as a causative factor.

In early adult life nephritis begins to contribute a very positive percentage of cases. Many of the mediastinal inflammatory conditions also exert an influence It must not be forgotten that the heart and the pericardium rest posteriorly on the esophagus and aorta, and that anteriorly the pericardium is intimately attached to the pleura. In a considerable number of instances of both acute and chronic tuberculosis the pericardium is found at the necropsy the seat of active tuberculous disease. Scarlatina, cerebrospinal fever, influenza, erysipelas and syphilis all contribute their quota—and bear out the assertion that whatever infests the blood-stream finds it difficult to pass the pericardium by.

MUSCULAR AND VALVULAR INSUFFICIENCIES WITH CARDIAC DILATATION

Only a word need be added with regard to the direct etiology as contrasted with the symptomatology of the insufficiencies (muscular and valvular) of the hearts in subjects suffering from the acute infectious diseases.

We were all taught, and later at some time no doubt began to teach, that the dilated heart usually is incompetent as the result of the misbehavior of some one valve or valves. In fact, in the study of both the acute and chronic heart lesions we have been led to overemphasize the importance of the valvular abnormality and to ignore in a measure the significance of the covering and substance of the organ. We forget that the same condition or infection has caused both the endocarditis and the myocarditis. To-day it would be well for us all to take up again the study of the histopathology of the heart muscle, not with a view to exaggerating the frequency of cardiac disease, but of placing and locating the point of attack, and appraising the etiologic bearing of the infections to acute involvements of the myocardium.

There is an unfortunate tendency among heart students to teach the needlessness of fear of athletic overstrain or damage to a heart which shows no frank signs of cardiac disease. In the light of this study it would be well worth a young man's time and trouble to have his physician inquire into his past history with reference to the acute infectious diseases, and a possible latent structural insufficiency of the cardiac muscle. We constantly hear of young athletes being hurried from their convalescence from a tonsillitis, or even a typhoid fever, into training, and thence into an eight-oared race or a football match. More than once I have personally come into conflict with a medical director of a school or college who appeared willing to permit some young giant, though already suffering from air hunger and cardiac arhythmia evident to the patient, to engage in athletics no less strenuous than a football contest or a cross-country run.

TREATMENT AND PROGNOSIS

What is the treatment and what the prognosis of a carditis such as one must expect in an acute infectious disease? I would suggest in a word for the acute illness the most perfect possible rest, and the saving of every unnecessary contraction of an organ which we unfortunately cannot ever put to sleep. At the beginning of treatment, an empty, and, for a little time, an "as nearly as possible" sterile gastro-intestinal tube will be the second essential, instead of the frequent attempt to overnourish and feed. Drugs, except opium and possibly atropin, will be of questionable value. If employed at all they should be such as are calculated to subdue and quiet overeffort, rather than

9. Blechmann: Ann. de méd. et chir. Infant., July 1, 1913.
10. Brooks: Am. Jour. Med. Sc., 1909, p. 796.

incite and excite a lame organ to further exertion. No drug will decide the issue between cardiac competence and collapse. It may be that even the cardiac sedatives and tonics had better be omitted. The most difficult period for the physician will be the convalescence, and the year following the acute illness. If we would conserve the heart muscle and its endocardium it will be of prime importance that all localized foci of infection should be removed from the body. We are just beginning to appreciate the fact that diseased tonsils and adenoids invite a heart lesion, a pulmonary tuberculosis or a pneumonia; that pus tubes or an infected prostate may underlie malignant endocarditis or a joint rheumatism; and that a grumbling appendix may be the cause of arteriosclerosis, myocardial degeneration, arthritis deformans, or varicose veins. In short, it is not safe from any point of view to ignore a chronic focus of disease.

Very gradual must be the progress in dispensing liberty and freedom to a convalescent from an acute infection in his venture back toward a normal life. Very thorough and intelligent must be the physician's test of the heart's capabilities before the patient is turned over completely to his own direction and guidance. Long after the acute attack has been forgotten the heart muscle may betray a latent disability that has lingered and escaped suspicion. Fortunate the man or woman who enjoys a full convalescence and a life of uninterrupted health following the damage sustained by the cardiac structures in the infectious diseases of an earlier age.

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THE INTRADURAL ADMINISTRATION OF MERCURIALIZED SERUM IN THE TREATMENT OF CEREBROSPINAL SYPHILIS *

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The subject of syphilis in general, and syphilis of the central nervous system in particular, is at present in a transitional state; and it is, therefore, desirable to formulate a tentative classification of the disorders which are to be included under the title of this paper.

In its broader sense, the term "cerebrospinal syphilis" may be so construed as to include every pathologic process within the central nervous system which is of a specific nature. If this broader meaning is adopted, it should be clearly understood what anatomic limitations are to be placed on the central nervous system. Histologically, it could not be said to include more than the true nervous tissue, since the cerebrospinal vessels and meninges, although integral parts of the central nervous system, are not, strictly speaking, neurologic units. Pathologically and clinically, they are, however, quite inseparable; and experience has taught that, for practical purposes, syphilitic affections of the cerebrospinal or central nervous system cannot well be studied independently of the meninges and blood-vessels.

Since these structures may be involved independently or collectively, it has been the custom to treat syphilis of the central nervous system under the following subdivisions: (1) meningitis, secondary or tertiary; (2) cerebrospinal syphilis, which has further been divided into three types, endarteritis, meningomyelitis and gummatous infiltration, and (3) the two parasyphilitic disorders, tabes dorsalis and general paresis. Continued reports on the Wassermann reaction and the recent studies of Noguchi seem to indicate that these so-called parasyphilitic diseases can now be regarded as instances of true syphilitic affections of the nervous system. Consequently, when a diagnosis of cerebrospinal syphilis is made, it is obvious that a multiplicity of pathologic and symptomatic states may be included.

Recent observations by Swift and Ellis[1] and similar personal experiences have led me to believe that it will be helpful to designate the endarteritic group of cases in a separate classification distinct from specific diseases of the cerebrospinal system. It has been observed, in the majority of cases of syphilis in which the neurologic symptoms indicate a vascular disturbance, that the spinal-fluid examination is quite normal. The cell count is only slightly, or not at all, increased, and the fixation test is frequently negative; but the Wassermann serum reaction is generally positive. In my series of cases, these observations have been so uniform that not infrequently it can be predicted, with some assurance, that the spinal-fluid examination will be within normal limits. Naturally, the accuracy of one's prediction will depend somewhat on his ability to distinguish the vascular nature of the affection.

These observations and the demonstrations of the specific organism in the so-called metasyphilitic diseases, together with their determining influence on the form of therapy to be employed, have suggested to me the following classification of syphilitic affections of the central nervous system:

1. Syphilitic meningitis, secondary and tertiary.
2. Cerebrospinal syphilis, including all specific affections in which the nervous tissue itself is directly affected, such as meningomyelitis, gummatous infiltration, tabes dorsalis and general paresis.
3. Cerebrospinal syphilitic arteritis.

To the clinician, this comprehensive use of the term "cerebrospinal syphilis" can hardly be more than confusing unless the particular variety is clearly stated. It is therefore advisable to continue the use of the older terminology, with the understanding that parasyphilis has only clinical significance, and that syphilitic arteritis of the cerebrospinal vessels probably exists without direct invasion of nervous tissues.

With the specific nature of these diseases more clearly established, it was hoped that the use of Ehrlich's new preparation might be the means of securing brilliant therapeutic results. Unfortunately, at first, it was just this class of cases which was thought to offer particular contra-indication to its administration. The hopelessness, however, of many cases seemed to justify the assumption of reasonable risk; so that, in time, this early objection was overcome and salvarsan began to be widely used in all forms of syphilitic nervous affections. While in some instances the improvement was remarkable, there were many cases in which the results were disappointing.

This failure to secure equally promising results in diseases of the central nervous system was not long

* Read before the Philadelphia Neurological Society, Oct. 23, 1914.

1. Swift and Ellis: The Cerebrospinal Fluid in Syphilis, Jour. Exper. Med., 1913, xviii, 162.

in stimulating more diligent efforts to ascertain the cause of this failure and establish, if possible, a more successful mode of therapy. Two probable explanations were readily suggested. Either irreparable changes had taken place in the nervous system, or the drug failed to reach the seat of infection. The first explanation was unsatisfactory, and destined to discourage further hope of progress in this direction. There is, no doubt, an incipient stage from the period of invasion of the central nervous system to the beginning of destructive changes when it might be hoped to arrest the disease by efficient therapy. Although the period of invasion and duration of the incipient stage are undetermined, it has been observed that even in the earliest manifestations of nervous symptoms, intravenous administration of salvarsan is often apparently ineffective. It seemed, then, that the second explanation offered greater encouragement for further investigation; and the first noteworthy contribution in this direction was made by Swift and Ellis[2] when they introduced a method of administering salvarsanized serum directly into the subdural space.

The technic of this method is now well known and the method itself, which was at first received with some skepticism, has lately become quite generally adopted. Unhappily, just as intraspinal therapy appeared to be gaining recognition, it received a severe blow from the unfortunate experiences on the western coast. Whether this was a determining factor or not, it appears to be true, at present, that the earlier enthusiasm regarding this form of intraspinal therapy is somewhat diminished. While the real value of the method has been questioned, I believe there can be little doubt that some form of direct therapy is desirable. If the infection is localized within the central nervous system, and it can be demonstrated that drugs given by the usual methods do not reach the seat of infection, it is obvious that the adoption of a direct method of administration is to be encouraged.

Numerous parallel studies on the Wassermann reactions in the serum and spinal fluid, together with the increased globulin and lymphocytes in the spinal fluid, seem to indicate that the central nervous system not infrequently shows evidences of specific infection, while the extraneural tissues, as represented by the negative Wassermann reaction in the blood, have apparently escaped. With a local infection so isolated from the systemic circulation that its nature could not be determined by the usual serum reactions, it was logical to assume that substances introduced into the circulating blood might not reach the seat of infection.

The studies of C. D. Camp[3] on the spinal fluid of seventeen patients who had received intravenous doses of salvarsan established the fact, in his case at least, that no evidence of the drug could be detected in the spinal fluid. The fluid was examined at variable intervals after treatment, and in only one case, after large and repeated doses, was there any evidence of arsenic. Others, however, have reported its presence in very minute quantities. Since the physiology of the spinal fluid and its relation to the vascular system is still undetermined, any explanation of these negative findings must be more or less problematic. As a matter of fact, such observations awakened a more lively interest in a direct form of therapy and encouraged my belief that the Swift-Ellis method is a step in the right direction.

While my earlier experiences with this method were most encouraging and were quite parallel with those recorded by Swift and Ellis, continued observation soon taught me that their method, although most promising, is not all that is to be desired. From a clinical and laboratory point of view there were unquestioned evidences of its usefulness, and fortunately, in my experiences, no alarming consequences.

The manner in which salvarsanized serum was supposed to be effective was an early subject for discussion. It was thought that the arsenic had undergone some change within the circulatory system which rendered the serum preparation spirocheticidal. On the other hand, those who were skeptical questioned the efficacy of the method altogether and maintained that the improvement in clinical symptoms was entirely due to the intravenous administration; while the reduced cell count and globulin and fixation tests in the spinal fluid could be accounted for by the withdrawal of spinal fluid and dilution of the remaining portion by the injected serum.

However this may be, it does not require extensive mathematical knowledge to understand that 12 c.c. of serum (the original amount advised by Swift and Ellis) removed from a patient who has received only 0.6 gm. of salvarsan must contain an infinitesimal amount of either the altered or original arsenical preparation. This, it seems, is the most forceful argument against the adoption of this form of intraspinal therapy, and the subject is admirably treated in a current article by Sachs, Strauss and Kaliski[4] From the chemical analyses of Benedict on ten specimens of blood removed from fifteen to forty-five minutes after intravenous injection of salvarsan, these authors have made some interesting calculations. Only from 0.00004 to 0.0001 gm. of metallic arsenic could be detected in 20 c.c. of whole blood, and from these figures it was estimated that blood removed three-quarters of an hour after administration of salvarsan contained practically no free arsenic in the serum.

After almost a year's experience with the original Swift-Ellis method, it occurred to me that more effective action might be secured if a larger quantity of some specific drug were introduced into the subdural space. Even a hasty review of the literature soon taught me that the direct introduction of unchanged salvarsan in any appreciable quantity could not be done without serious risk to the patient. Wechselmann,[5] and later, Marinesco,[6] had used neosalvarsan in aqueous solutions, but the results were doubtful and the reactions severe. Within the same year, Ravaut[7] began the use of unchanged neosalvarsan intraspinally, and a few months later Marie and Levaditi[8] made similar experiments in the treatment of general paresis, with disappointing consequences. Subsequently, Ravaut[9] improved his technic slightly by using hypertonic solutions in freshly distilled water, by which he asserted that he obviated the unpleasant irritative effects of the injection. In April of the same year,

2. Swift and Ellis: New York Med. Jour., 1912, xcvi, 53.
3. Camp, C. D.: Jour. Nerv. and Ment. Dis., 1912, xxxix, 807.
4. Sachs, Strauss and Kaliski: Modern Methods of Treatment of Syphilis of the Nervous System, Am. Jour. Med. Sc., 1914, cxlviii, 693.
5. Wechselmann: Deutsch. med. Wchnschr., 1912, xxxviii, 1446.
6. Marinesco: Ztschr. f. phys. u. diät. Therap., 1913, xvii, 194.
7. Ravaut: Deux cas de syphilis nerveuse Traité par les injections intrarachidiennes de mercure et de neosalvarsan, Gaz. de hôp., 1913, lxxxvi, 1061.
8. Marie and Levaditi: Bull. et mém. Soc. méd. d. hôp. de Paris, Nov. 18, 1913.
9. Ravaut: Ann. de méd., 1914, i, 49.

Wile[10] introduced this revised technic in America and used it without unpleasant results in two cases. He injected from 1 to 4 drops of a 6 per cent. aqueous solution of neosalvarsan intraspinally (equivalent to from 3 to 12 mg. of neosalvarsan). It has been further suggested by Marinesco and Minea[11] that the arsenical preparation be added in vitro to the patient's serum, and they report the adoption of this method in twenty cases, but the results were, on the whole, discouraging.

The whole question of intraspinal arsenical therapy is very wisely and cautiously summarized in an editorial[12] of THE JOURNAL almost a year ago, which, in my opinion, is quite acceptable at the present time. The instability of these complex arsenical preparations and their irritative and toxic properties make their direct introduction into the dural sac an extremely hazardous procedure, and my desire to make further studies in this direction was not encouraged by the experience of others.

It was no new departure to think of introducing mercury into the subdural space. Irrigation of the spinal canal with 1:30,000 mercuric chlorid solution had already been practiced as a postoperative measure, and later, Ravaut[7] reported the injections of mercurial salts into the dural space for the treatment of cerebrospinal syphilis. His technic, however, and exact dosage are not clearly stated, and the laboratory studies are incomplete. He reports two cases. The first was treated by intraspinal injection of 2 drops of a 1:1,000 mercuric chlorid solution. The only unpleasant after-effect was slight increase in headache. Three days later the patient left the hospital and did not return for further study or treatment.

The second case, which was treated with mercuric cyanid, received intraspinally 2 drops of a 1 per cent. solution. The cyanid was chosen because it was thought to be a very active salt, rich in mercury, and from animal experimentation less apt to produce local irritation because of its lowered coagulative properties. The reaction in this instance, however, was pronounced. A few minutes after administration the patient complained of pains and cramps in the legs. These were followed by severe muscular contraction which began in the feet, ascended to the trunk and arms and later involved the whole body. Trismus was pronounced. The contractions were of five or ten minutes' duration, and on the following day most of the irritative symptoms had subsided. An examination of the spinal fluid four months later showed considerable reduction of the lymphocytes and a negative Wassermann.

These discouraging results with the direct introduction of mercurial salts convinced me that they were scarcely less toxic, in appreciable doses, than the more unstable arsenical preparations. If mercury were to be used at all it is evident that a preparation must be obtained which is therapeutically active, and at the same time possesses comparatively low toxicity and local irritative action.

The fact that many patients who came to me for the Swift-Ellis treatment had already received thorough courses of mercurial therapy suggested that they might be receiving along with the salvarsanized serum a mildly impregnated mercurialized serum.

A series of experiments was then begun in which fifteen patients suffering from syphilitic diseases of the nervous system were divided into three groups of five each. The several groups were given active mercurial treatment by the following methods: The first group received inunctions, the second daily intramuscular injections of the biniodid in oil, and the third mercuric chlorid and potassium iodid by mouth. All were carried to the point of saturation, when blood was withdrawn and serum obtained for chemical analysis.

The serum was sent to Drs. Penniman and Browne, analytic chemists of Baltimore, with the request for a quantitative estimate of the mercurial content. Specimens of spinal fluid were also obtained for similar analysis.

On completion of the chemical analysis, Dr. Browne sent the following report on technic and results: The mercury was extracted and converted into mercuric chlorid and the quantity estimated according to the well-known Nessler color reactions. While the analysis showed slight variations in the amount of mercury present, in general, these investigations would indicate that (1) the serum of patients treated by inunctions showed a slightly higher mercurial content than that from the other two groups; (2) the average mercurial content of serum from all three groups was approximately 0.0000059 gm. per cubic centimeter, and (3) the spinal fluid in two instances showed only a questionable trace of mercury which was too small to be estimated. The report is concluded with the following caution:

> The difficulties in estimating such minute quantities are so great that I wish to remind you that these figures must not be accepted as absolute. In an endeavor to find the limits of accuracy in this work, I made a solution of blood albumin and added a known quantity of mercury (0.000058 gm.). I recovered from the solution by this method 0.000047 gm., or 80 per cent. of the amount taken.

While it would be absurd to entertain the idea that a patient's serum could, by this means, be sufficiently impregnated with mercury to render it of therapeutic value, these analyses convinced me that mercury is present in the circulating blood in amounts approximately equal to the arsenical content after salvarsan therapy, and that in the majority of cases it is not detected in the spinal fluid. Evidently, then, many patients who were being treated with salvarsanized serum were receiving at the same time a serum of low mercurial content, but in too small amounts to possess any therapeutic value or furnish any information as to its local action and toxicity; and it seemed reasonable to conclude that a preparation of mercury similar to that supposed to exist in the circulating blood would offer many advantages for intraspinal administration.

When an inorganic salt of mercury comes in contact with protein matter a coagulative process occurs, in which the insoluble albuminate of mercury is formed; and the occurrence of this reaction led me to believe that it might account for some of the unpleasant symptoms following the direct introduction of inorganic salts of mercury into the subdural space. If mercury exhibits this affinity for the protein molecule it would seem advisable to make use of a preparation in which this affinity is already satisfied. The albuminate, which is supposed to exist in the circulating blood, seemed to answer these requirements. Although its toxicity may not be less than that of the inorganic salts, since definite knowledge concerning the physical state of the albuminate ion is wanting, it was thought

10. Wile, U. J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., April 11, 1914, p. 1165.
11. Marinesco and Minea: Bull. de l'Acad. de méd., 1914, lxxviii, 259.
12. Deaths Following Injection of Neosalvarsan in Los Angeles, editorial, THE JOURNAL A. M. A., March 21, 1914, p. 935.

that it might be less irritating, and especially so if administered in a serum menstruum.

Since the manufactured albuminate on the market is difficult to obtain, unstable and insoluble, it was decided that more satisfactory results might be obtained by adding a mercurial salt directly to human serum. The precipitated albuminate which is at first formed is readily soluble in an excess of albumin, so that on the further addition of serum a perfectly clear solution is obtained. By fractional precipitation, it was determined that approximately 0.022 gm. (⅓ grain) of mercuric chlorid, in solution, may be added to 2 c.c. of serum before precipitation is complete, and that it is necessary to add 4 c.c. more of serum in order completely to dissolve this precipitate. In other words, 6 c.c. will hold in solution 0.022 gm. (⅓ grain) of mercuric chlorid converted into the albuminate.[14]

Obviously, then, a perfectly clear solution of mercury albuminate in blood-serum can be obtained in which the mercurial content is larger than that desired for therapeutic purposes. Consequently, I determined to make use of such a serum for intraspinal administrations. At first the dose of mercury was extremely small and was determined according to body weight, the average tolerance for mercury when administered intramuscularly, and the proportion between the volume of circulating blood and spinal fluid. By cautiously increasing the dose of mercury, it was found that 0.0013 gm. (1/50 grain) of mercuric chlorid and even 0.0026 gm. (1/25 grain) could be safely administered when added to the prepared serum. Perhaps even larger quantities may be given, but I have found the smaller amounts quite effective.[13]

TECHNIC

The technic for the preparation and administration of the serum is similar to that employed in the Swift-Ellis method, except that no drug is administered before withdrawing the blood.

1. Sufficient blood is withdrawn to yield from 12 to 30 c.c. of serum. The larger amount is obtained if concentrated serum is to be used. After the blood has coagulated the serum is pipetted, and if necessary,
2. Centrifugalized for twenty minutes.
3. If diluted serum is to be used, to 12 c.c. of the centrifugalized specimen is added 1 c.c. of a solution of mercuric chlorid in freshly distilled water so made that each cubic centimeter contains 0.0013 gm. (1/50 grain) of mercuric chlorid.
4. To the serum thus prepared is added sufficient quantity of normal salt solution to make a total volume of 30 c.c. If the concentrated serum is used this step is omitted.
5. It is heated at 56 C. (132.8 F.) for half an hour, and
6. Administered, by gravity, at body temperature.

Since the desired amount of mercury is readily soluble in the diluted serum I can see no special reason for employing the concentrated preparation.

In administering the serum, I have adopted the method followed by Swift and Ellis. With the patient lying in bed, lumbar puncture is done, pressure readings are made, and spinal fluid withdrawn until the pressure falls to 30 mm. The serum is then administered and the foot of the bed elevated about 8 inches for half an hour.

CLINICAL RESULTS

At the present writing I have the records of thirty-two patients with syphilis of the nervous system who have been treated by this method. The records have been collected from my private practice and from the Sheppard and Enoch Pratt Hospital (Towson, Md.) where, through the kindness of Dr. E. N. Brush, permission was obtained to have Drs. Sargent and Asper of that institution use this technic on the material at their disposal.

Of the 32 cases there are 13 of tabes dorsalis, 2 of taboparesis, 3 of cerebrospinal meningomyelitis and 14 of general paresis. In general, the cases of tabes and meningomyelitis have shown the most marked improvement although, in a few instances, general paresis has been distinctly benefited. Since it would be just as instructive, and certainly less tiresome, to the reader, to make general deductions from the series of cases as a whole, I shall not burden him with a detailed account of individual cases.

The reaction following the administration of mercurialized serum is usually mild. There is some pain in the legs for six or twelve hours, slight nausea, rarely vomiting, and a moderate rise of temperature. All of these symptoms generally subside within thirty-six hours. I have not observed the sphincter disturbances sometimes seen after the use of salvarsanized serum, nor has there been any evidence of renal disturbance or other untoward symptoms.

The improvement in clinical symptoms has been similar to that observed in the Swift-Ellis method. In most instances of locomotor ataxia, there has been decided relief of the pains, the gait has improved, and gastric symptoms have been distinctly alleviated; in others, there has been little or no change in the clinical condition. A tabetic and a patient with taboparesis showed such marked improvement that they deserve brief mention. When first seen, the tabetic was annoyed by bladder disturbances, slight sexual disorders, and inability to walk without assistance. After four treatments all symptoms were markedly improved, and I have lately heard that he is now conducting a profitable business and is the father of a healthy child. In the case of taboparesis, in which there were such marked mental features that the patient could not be left alone, it was decided to try first a thorough course of mercury by intramuscular injections. When the limit of tolerance was reached, there was practically no change clinically, and it was decided to begin intraspinal therapy with mercurialized serum. Following the first administration there were evidences of improvement in the mental state and this improvement continued after each treatment. In all, five intraspinal injections were given, and on the patient's discharge from the Sheppard and Enoch Pratt Hospital Dr. Sargent made the following note: "The patient's mental condition is practically normal, all grandiose ideas have disappeared, expansiveness is gone, the gait is improved, and he has gained 19 pounds in weight." Six months later the patient was seen by Dr. Hamburger and myself, and his mental condition was so clear that it was decided not to commit him to an insane institution, where his family wished to send him

13. After this article was prepared for publication, a letter was received from Mr. Campbell, of the H. K. Mulford Co., containing a report of Dr. Pittenger's experiments in their laboratory. At my suggestion Mr. Campbell kindly directed that studies be made on the toxicity and local irritative action of mercurialized serum. It has been determined that by intravenous administration this serum is as toxic as the inorganic salts of mercury, but when administered intradurally it can be given in much larger doses.

14. These proportions are only approximate. No doubt a much larger quantity of mercuric chlorid may be added.

because of the attention required on account of his tabetic symptoms.

The spinal fluid has, in every instance, shown a marked decrease in the cellular elements, and in many cases, the diminution has occurred more rapidly than is observed after the use of salvarsanized serum. The globulin is in general diminished, but the Wassermann reaction, as in the use of salvarsan, appears to be less readily affected. In the thirty-two cases a negative reaction was obtained in only twelve. This low percentage may be accounted for by the fact that the number of treatments was determined largely by the cell count and clinical symptoms; and since these usually showed evidences of improvement after relatively few treatments — usually five — further treatment was not insisted on. Perhaps a more prolonged course might have increased the percentage of negative Wassermann tests.

CONCLUSIONS

1. While it is not declared that mercurialized serum alone is the only treatment that is necessary in syphilis of the central nervous system, I believe it is equally, if not more, efficacious than salvarsanized serum in the local treatment of these diseases.

2. The immediate reactions following its administration are, in general, not so severe as those after the use of salvarsanized serum, and the cell count in the spinal fluid appears to be more quickly reduced.

3. Since preliminary medication is not required, the blood may be obtained at any time; and because of the greater stability of the mercurialized serum it may be prepared at leisure and kept in sealed flasks until it is convenient to administer it.

4. In certain cases of cerebrospinal syphilis in which the serum Wassermann is negative but in which there are all the indications for intraspinal treatment, it has impressed me as unfortunate that the patient had to be subjected to the discomforts of an intravenous administration of salvarsan merely for the purpose of securing a preparation for intradural injection. This objection does not arise in the use of mercurialized serum. It is true that in many cases both the blood and spinal fluid show evidences of infection, and in such instances I have not felt that the intravenous dose of salvarsan could justly be withheld, so that I have frequently given the combined salvarsanized and mercurialized serum intraspinally.

5. Owing to the greater stability of the mercurialized serum, it is hoped that a method may be devised by which a permanent preparation can be dispensed in sealed ampules and thus simplify the whole technic of intraspinal therapy. While it may be unwise to entertain the idea of using a foreign serum, it is not unlikely that human serum may be obtained in sufficient quantities for this purpose.

Nativity of Parents and Infant Mortality.—Investigation of deaths of infants from so-called congenital disease, including prematurity, congenital debility, convulsions, malformations and injuries at birth, by the Bureau of Child Hygiene of New York City disclosed a definite relation existing between the proportion of congenital deaths and the nationality of the parents. Only three nationalities were considered as the proportion of the others was too small to be of consequence. The Italian and Russian-Austrian proportions of deaths are very low as compared with their proportions of births, while the United States and "All Others" are relatively high. The percentage of congenital deaths among the United States group is 32.3; all others, 43.6; Italians, 14.6; Russian-Austrian, 18.5.

A MORPHOLOGIC AND CHEMICAL STUDY OF THE DOUBLE REFRACTIVE FATS OF THE ADRENALS IN DELIRIUM TREMENS*

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Kaiserling and Orgler[1] were the first investigators to call attention to the presence of anisotropic droplets or liquid crystals in the cortex of the human adrenal glands. Herrmann[2] later studied a small number of human adrenals with regard to their content in the doubly refractive substance, and reports it uninfluenced by age, but diminished by wasting diseases. He observed its entire absence once in the adrenals of a 70-year-old woman dying from miliary tuberculosis, and again in the glands removed from a body with long-continued, chronic lung phthisis. The small number of glands studied was not sufficient, however, to permit drawing conclusions regarding the causal relationship between disease and the absence of the anisotropic droplets. White[3] also merely reports the presence of doubly refractile droplets in the adrenals removed from thirty individuals dying from various diseases. Kawamura[4] observed the anisotropic substance in a finely divided form in the cortex of adrenals removed from fetuses and children up to 10 years of age. The abundance of this, he records, is not influenced materially by chronic and acute diseases, but is diminished markedly by sepsis and alimentary intoxications. Kawamura observed no diminution of the doubly refractive substance in disorders of the vessels, obesity, marasmus, tumors and inanition, but on the contrary, in some of these conditions an increase. He confirms Herrmann's observations on its diminution in chronic tuberculosis, and that age does not seem to influence its amount. A diminution of these droplets is recorded by Kawamura in sepsis, typhoid fever, diabetes, and once in chronic nephritis. Weltmann[5] records their diminution in the adrenals removed from persons dying with septic diseases, typhoid fever, severe infectious enteritides, purulent peritonitis, frequently in croupous pneumonia, ulcerative carcinoma, and cavernous phthisis; on the other hand, he found them abundant in atherosclerosis, cirrhosis of the liver, chronic nephritis, generalized passive congestion, cerebral hemorrhage, and encephalomalacia, as well as in subacutely progressing infections. A complete absence of the doubly refractive substance is reported by Mulon and Porak[6] in the adrenals removed from the body of a patient dying with Huntington's chorea. A relatively smaller amount of the adrenal lipoids was found by Landau[7] in phthisis, septic processes, and with many tumors.

Practically all investigators agree in considering the doubly refractive droplets present in the adrenals

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* From the Laboratories of Pathology of Rush Medical College and the University of Chicago.

1. Kaiserling, C., and Orgler, A.: Ueber das Auftreten von Myelin in Zellen und seine Beziehung zur Fettmetamorphose, Virchows Arch. f. path. Anat., 1902, clxvii, 296.
2. Herrmann, O.: Ueber Vorkommen und Veränderungen von Myelin substancen in den Nebennieren, I. D. Tübingen, 1905.
3. White, C. P.: On the So-Called Fatty Degeneration of the Adrenals, Jour. Path. and Bacteriol., 1909, xiii, 11.
4. Kawamura, R.: Die Cholesterinesterverfettung, Jena, 1911.
5. Weltmann, O.: Ueber das doppeltbrechende Lipoid der Nebenniere, Beitr. z. path. Anat., 1913, lvi, 278.
6. Mulon, P., and Porak, R.: Un cas d'absence d'enclaves lipo-cholesteriques dans la surrenale humaine (choree de Huntington), Compt. rend., Soc. de biol., 1912, lxxiii, 281.
7. Landau, M.: Nebenniere und Fettstoffwechsel, Deutsch. med. Wchnschr., 1913, xxxix, 546.

as lipoids, or, more exactly, esters of cholesterol. According to Kawamura there may be other doubly refractive spheroliths present in fresh tissues, such as

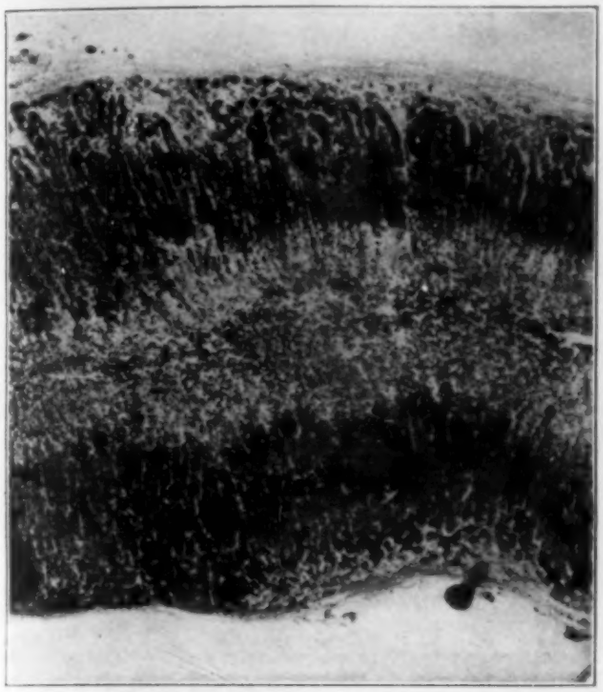

Fig. 1.—Normal adrenal section stained with sudan III; Nicol prisms uncrossed; × 38.

the globules in the uric acid infarcts, in part the psammomas, and the prostatic corpora amylacea. These, of course, are not lipoids. Moreover, doubly refractile globules occur in fatty livers, in cloudy swelling of the liver, and have been observed in teased preparations of the central nervous system, especially in diseased softened regions together with myelin droplets or globules, as well as in numerous other pathologic retrogressive processes. In none of these, however, do the droplets lose their double refrangibility with heating. Kawamura summarizes the optical properties of the anisotropic droplets in question as follows: In a fluid state they are doubly refractive; a property lost on heating, to be assumed again with cooling. In tissues fixed with 10 per cent. dilution of liquor formaldehydi they appear as needle-like crystals which are converted by heat into doubly refractive droplets. The relation between the droplet doubly refractive substance in fresh tissues and the crystalline in fixed preparations, he states, is always constant and equal. The same relation is also true on changing the crystalline form into the globular by heat. In the examinations to be mentioned presently these observations by Kawamura have been confirmed repeatedly.

Rosenheim and Tebb[8] analyzed chemically the lipoids from the adrenal and isolated a mixture of fatty acids and cholesterol esters, as well as small amounts of sphingomyelin and phrenosin. Adami and Aschoff[9] sought to determine the chemical nature of these anisotropic droplets by preparing substances artificially with doubly refractive properties, and observed that the following may contain doubly refractive myelin figures, and sometimes also droplets: (1) phosphatids, among which is lecithin; (2) soaps of the fatty acids; (3) cholesterol esters; (4) solutions of cholesterol in phosphatids, in fatty acids and in fats; (5) solutions of cholesterol esters in fats. Of these, only the cholesterol esters easily formed permanent emulsions which contained doubly refractive droplets. Kawamura pursued the same method of investigation on a large number of chemically pure lipoids, as well as with artificial lipoid mixtures. Aside from the cholesterol esters, he observed doubly refractive globules in sphingomyelin and phrenosin isolated both from the brain and from the adrenals. Also with cephalin-cholesterol and cephalin-cholesterol-oleic acid mixtures, lecithin, and sodium oleate. The cholesterol-fatty acid mixtures tend to form myelin, a reaction dependent on the dissolved cholesterol, for the doubly refractive properties appear only with a relatively rich cholesterol content. Cholesterol-glycerol mixtures, glycerol esters, cholesterol-palmitic acid esters, myelin, the fatty acids, soaps, and cephalin have no doubly refractive properties.

In the examination of the bodies of persons dying from delirium tremens, Dr. E. R. Le Count, one of the coroner's physicians in Chicago, found alterations so regularly in the cortices of the adrenals that it was decided to ascertain, if possible, the reason for such changes. The changes consist in a more or less striking diminution of the yellow color normally present in the cortex. This diminution is frequently a narrowing of the yellow, band-like cortex combined sometimes with its irregular disappearance, produc-

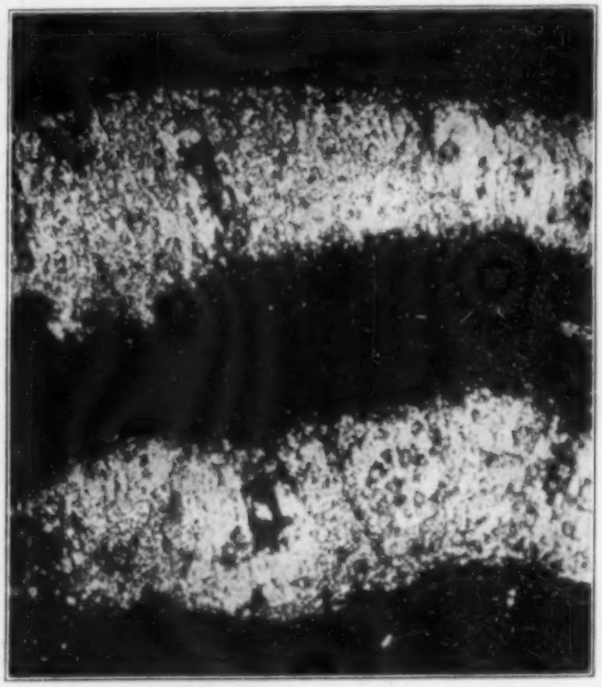

Fig. 2.—Same field illustrated in Figure 1 with the Nicol prisms crossed; the light portions represent the distribution and abundance of the double refractive lipoids; × 38.

ing an uneven yellow edge bordering the medullary region into which the substance of the medulla apparently extends, sometimes reaching entirely to

8. Rosenheim, O., and Tebb, M. C.: On the Lipoids of the Adrenals, Proc. Physiol. Soc. London, 1909, xxxviii, p. liv.
9. Aschoff, L.: Zur Morphologie der lipoiden Substanzen, Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's), 1910, xlvii, 1.

the capsular margin. In very marked instances, the entire cortex assumes a reddish-brown color with only occasional areas of yellow distributed at irregular intervals, or there may seem to be an entire absence of all the yellow substance. These changes are grossly very interesting, and so regularly encountered in delirium tremens that when they are absent, as a rule, some other influence than simply the poisonous action of the alcohol manifested as delirium tremens is found contributing to death.

The adrenal glands removed for the purpose of study were weighed after the perirenal fat had been dissected away carefully, and then fixed in 10 per cent. dilution of liquor formaldehydi. After a few days, thin transverse segments of the fixed glands were frozen and sectioned. Some of the sections were mounted directly on slides in glycerol; others were stained from ten to fifteen minutes with sudan III, and then mounted. Preparations were made in this manner from practically all the adrenal glands studied, warmed to 80 C. (176 F.) in a drying oven, and afterward cooled. As controls for this work, the adrenals from persons meeting sudden death, such as results from gunshot wounds or other severe injuries, were used, and sections prepared in a similar way. The micropolariscopic examination was made soon after, using a very low magnification (28 diameters), and artificial illumination in a dark room to insure uniformity. The adrenals from thirty-four persons dying from delirium tremens were compared with the controls, and in practically every instance the doubly refractive droplets in the delirium tremens adrenals were diminished slightly, moderately, markedly, very markedly, and sometimes in a given area were absent entirely (Table 1).

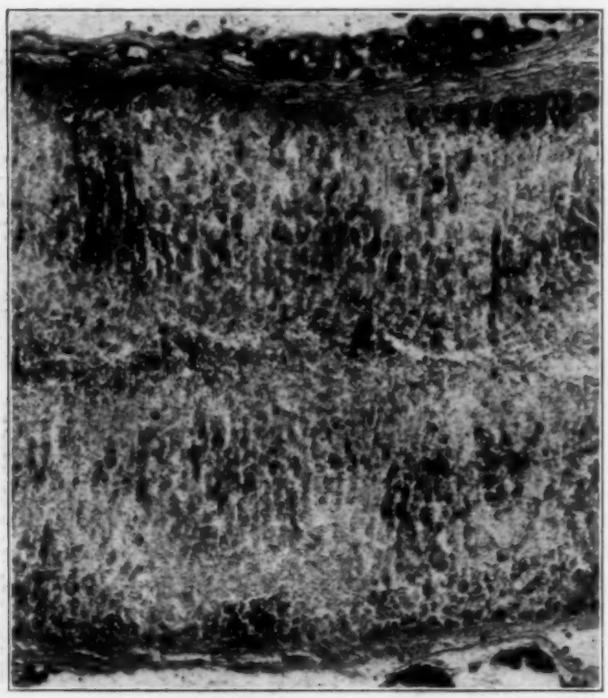

Fig. 3.—Delirium tremens adrenal section stained with sudan III, illustrating the diminution of the lipoids staining with this reagent; Nicol prisms uncrossed; compare with Figure 1; × 38.

Further evidence that the cholesterol content of the adrenals is diminished in delirium tremens was obtained by quantitative chemical estimation. Seven adrenals removed from persons dying with delirium tremens and two controls were analyzed by the following colorimetric method, which, with slight modifications, is the process described by Autenrieth and Funk.[10] While such a colorimetric method may be open to criticism from the point of view of quantitative accuracy, nevertheless, it is probably far better for making comparative estimations of cholesterol than are only rough color determinations such as might be obtained in test-tubes with the Salkowski color reaction.

The fixed adrenals were taken from the 10 per cent. dilution of liquor formaldehydi, the excess fluid blotted off, and

TABLE 1.—DELIRIUM TREMENS ADRENALS

No.	Double Refractive Lipoids Diminished	Age	Under Observation, Days	Clinical and Necropsy Notes*
1	Moderately	61	14	Small red kidneys; syphilis.
2	Moderately	—	4	An alcoholic for 24 years; marked inflammation of the air passages; slight sclerosis of the brain.
3	Moderately	—	19	Was delirious when admitted to the hospital; syphilis; healed empyema; slight pulmonary tuberculosis.
4	Moderately	51	—	Tuberculous scars of the thorax; early bronchopneumonia.
5	Moderately	—	—	Syphilis; pseudolobar bronchopneumonia.
6	Moderately	33	—	Delirium tremens clinically and anatomically.
7	Very markedly	43	—	Delirium tremens complicated by trauma; extensive bronchopneumonia.
8	Moderately	35	20	Anatomically only delirium tremens.
9	Very markedly	45	6	Fractured rib; acute pleuritis; syphilis.
10	Moderately	61	—	Chronic nephritis; syphilis; bilateral bronchopneumonia.
11	Very slightly	—	3	Marked pulmonary tuberculosis.
12	Moderately	35	20	Developed lobar pneumonia shortly before death; anatomically lobar pneumonia; chronic nephritis; syphilis.
13	Moderately	35	—	Bilateral bronchopneumonia.
14	Very markedly	35	—	Clinically delirium tremens with early bronchopneumonia.
15	Markedly	35	6	Anatomically delirium tremens and bronchopneumonia.
16	Slightly	37	19	Slight latent pulmonary tuberculosis; marked bronchopneumonia.
17	Moderately	32	13	Chronic alcoholism.
18	Very markedly	38	12	Huge empyema; chronic nephritis; syphilis.
19	Very slightly	40	2	Anatomically delirium tremens.
20	Very slightly	38	14	Syphilis.
21	Markedly	38	12	Slight bronchopneumonia; chronic nephritis.
22	Very slightly	47	3	Healing duodenal ulcer; otherwise delirium tremens.
23	Very slightly	39	14	Developed delirium tremens in the hospital.
24	Moderately	—	—	Syphilis; chronic nephritis; slight bronchopneumonia.
25	Very markedly	—	2	Marked bronchopneumonia; syphilis.
26	Slightly	—	3	Chronic alcoholism; chronic nephritis; slight bronchopneumonia.
27	Very markedly	—	39	Bronchopneumonia.
28	Moderately	—	7	Chronic alcoholic; bronchopneumonia.
29	Markedly	—	5	Scalp wound; anatomically delirium tremens.
30	Very markedly	—	2	Anatomically delirium tremens.
31	Very markedly	—	1	Chronic alcoholism; atrophic cirrhosis of the liver.
32	Very markedly	39	13	Slight bronchopneumonia.
33	Very markedly	45	26	Infected scalp wounds.
34	Moderately	44	4	Anatomically delirium tremens.

NORMAL ADRENALS

The adrenals removed from the bodies of 17 persons meeting sudden death contained an abundance of doubly refractive lipoids. Ten of these persons met death as a result of skull fractures; four from gunshot wounds; two from severe trauma, and one from a broken neck.

* I wish to express my appreciation of the kind assistance rendered by Dr. C. E. Sceleth, physician in charge at the House of Correction Hospital, Chicago, as well as my gratitude for the suggestions offered by Drs. E. R. Le Count and H. G. Wells.

10. Autenrieth, W., and Funk, Albert: Ueber kolorimetrische Bestimmungsmethoden, München. med. Wchnschr., 1913, lx, 1243.

3 gm. of the ground tissue weighed into a 100-c.c. Erlenmeyer flask. Thirty c.c. of a 25 per cent. potassium hydroxid solution were added, and the tissue saponified on a steam bath for three to four hours. After cooling, the mixture was transferred to a 100-c.c. separatory funnel, extracted once with 30 c.c. of chloroform, and four times with 20 c.c. From 5 to 10 gm. of anhydrous sodium sulphate were added to the combined chloroform extracts to clear the solution, then the mixture was thoroughly shaken, and finally filtered in a dried 100-c.c. graduated, glass-stoppered cylinder through a dry filter, the volume finally being made up by adding chloroform to the filter. One-tenth gm. of cholesterol was dissolved in

TABLE 2.—CHOLESTEROL CONTENT OF NORMAL AND DELIRIUM TREMENS ADRENALS BY QUANTITATIVE CHEMICAL ESTIMATION

	Cholesterol per Gram of Moist Adrenal Tissue (Fixed in 10 per cent. Liq. Form. Dil.), Gm.	Condition of the Double Refractive Lipoids
Normal	0.0595	Abundant
	0.1066	Abundant
Average	0.0830	
Delirium tremens	0.0206	Very markedly diminished
	0.0222	Markedly diminished
	0.0166	Very markedly diminished
	0.0113	Very markedly diminished
	0.0233	Markedly diminished
	0.0242	Markedly diminished
	0.0193	Markedly diminished
Average	0.0196	

TABLE 3.—CHOLESTEROL CONTENT OF PATHOLOGIC ADRENALS REPORTED BY CHAUFFARD, LAROCHE AND GREGANT

Pathologic Condition	Number of Adrenals	Cholesterol per 1,000 gm. of Moist Weight Gm.
Renal insufficiency	3	61
		77.45
		40.32
Average		59.59
Chronic nephritis	7	34.64 to 79.68
Average		52.88
Acute infections:		
Typhoid fever	..	6.50
Pneumonia	..	4.70
		20.17
Puerperal sepsis	..	4.10
		4.28
Subacute meningitis	..	1.16
Tetanus	..	1.58
Average		9.58
Tuberculosis	13	2.08 to 31.15
Average		13.50
The low figures corresponding with febrile conditions and severe cachexia range between 2.08 and 5.85 gm., those for the fibroid tuberculosis between 12.8 and 31.15 gm.		
Mycloid leukemia	1	6.50
Asystole	1	17.50
Liver involvement	4	
Nodular carcinoma without jaundice		5.00
Cholelithiasis with icterus		10.20
Biliary calculi with carcinoma of the gall-bladder and icterus		16.80
Carcinoma of the gall-bladder with icterus		15.60
Average		12.35

50 c.c. of chloroform in a 50-c.c. volumetric flask, a solution used as the known in the determinations about to be mentioned. Five c.c. of the unknown extract were transferred from the stoppered cylinder to a 10-c.c. graduated centrifuge tube by means of a 5-c.c. pipet, 2 c.c. of acetic anhydrid and 0.1 c.c. of concentrated sulphuric acid added, the tube stoppered and shaken. Two c.c. of the known solution were transferred in a pipet to another 10-c.c. graduated centrifuge tube, 3 c.c. of chloroform, 2 c.c. of acetic anhydrid, and 0.1 c.c. of concentrated sulphuric acid added as specified above. Both tubes were then placed in a water bath at from 32 to 35 C. (89.6 to 95 F.) and left there in the dark for fifteen minutes, after which time a flocculent precipitate which usually appeared in the unknown solution was thoroughly sedimented by centrifuging. At this time both tubes contained a fluid having varying intensities of a bright green color, and the solutions were transferred to the chambers of a Duboscq colorimeter for comparison. Control tests were also made using 5 c.c. of chloroform, 2 c.c. of acetic anhydrid, and 0.1 c.c. of concentrated sulphuric acid.

The results of these determinations are given in Table 2.

Chauffard, Laroche and Gregant[11] report the cholesterol content of thirty-six adrenal glands removed from bodies with various pathologic lesions. The method employed in making these determinations is not given. Table 3 contains the results of their study.

Their figures given for the cholesterol content of the adrenals in renal insufficiency and chronic nephritis correspond very closely with those considered normal in this study. Quite probably these disorders exert very little influence on the cholesterol content of the adrenals.

Fig. 4.—Same field illustrated in Figure 3 with the Nicol prisms crossed; observe the striking diminution of the double refractive lipoids as well as their irregular distribution; × 38.

The physiologic functions of the adrenals, according to Landau, are not concerned with lipoid formation, but rather the adrenal cortex contains an increased lipoid content under different conditions which have in common only a retention of the lipoids, or are characterized by an abnormally increased lipoid formation, the opposite holding true in conditions accompanied by a lipoid-poor cortex. The variations in the lipoid content are to be considered as secondary to changes in the lipoid content of the body or of the individual organs. With certain limitations, such as inanition and infections, the cholesterol esters behave themselves like the total lipoid content of the adrenals, and probably also are carried to the adrenals and there stored up.

11. Chauffard, A., Laroche, Guy, and Gregant, A.: De la teneur en cholesterine des capsules surrénales dans differents états pathologiques, Compt. rend. Soc. de biol., 1912, lxxii, 23.

Inasmuch as acute toxic processes in general are associated with a diminution of the double refractive lipoids of the adrenals, the inference lies close that in delirium tremens the body is flooded by some acutely toxic substance, the nature and origin of which is purely hypothetic at present. That something more than the alcohol itself is concerned in producing these changes is derived from the repeated examination of adrenals removed from the bodies of chronic alcoholics without delirium tremens, in which the alterations described were not present.

AUTOGENOUS SERUM IN THE TREATMENT OF PSORIASIS*

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The treatment of certain obstinate diseases of the skin by human serum is a therapeutic measure of comparatively recent date. In view of some of the favorable reports on this method it seems strange that it has not been given a more extended trial, especially in America. Although the present report is limited to the treatment of one disease, psoriasis, by a single method of serum therapy, it may be of interest to say a few words on the general subject of the use of human serum in treating skin diseases.

In December, 1910, a communication was published by Mayer and Linser[1] on the result of treatment of a case of herpes gestationis by injections of serum obtained from another pregnant woman. The theoretic basis which led Mayer to suggest this therapeutic trial was as follows: During pregnancy certain poisonous substances are supposed to enter the maternal circulation from the placenta and act as antigens which in the normal case are neutralized by the formation of antibodies. In certain cases, however, such antibodies are not produced, the patient suffers from auto-intoxication, as shown clinically by eclampsia, hyperemesis and various distressing forms of skin disease. To supply the supposed lack of antibodies, Mayer suggested that the serum of another healthy gravida should be employed. The patient selected to test this theory was a pregnant woman, aged 24, presenting a severe type of so-called herpes gestationis. She was given 10 c.c. of serum intravenously, obtained from a healthy nonpregnant woman, without showing any improvement. Three days later a second injection from a pregnant woman was given and was followed by an immediate improvement, the eruption disappearing entirely at the end of two weeks. Other good results from this apparently specific treatment of toxic dermatoses of pregnancy were later reported by Mayer,[2] Freund,[3] Linser,[4] Fetzer,[5] Veiel[6] and Rübsamen.[7]

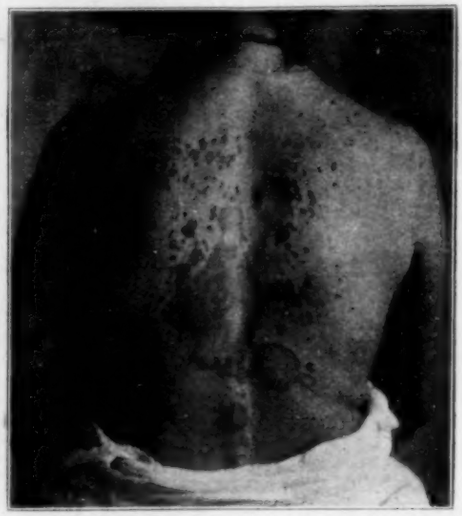

Fig. 1.—Case 5, before treatment; duration, one year.

Following his success in treating urticaria of pregnancy, Linser[8] was led to try the serum injections in urticaria and other skin diseases having nothing to do with pregnancy. Good results were reported in twenty-four cases of strophulus and urticaria papulosa of children, in prurigo, pemphigus and hemorrhagic diseases of the skin and mucous membranes.

Heuck[9] later reported good results in urticaria and strophulus of children, and in pruritus senilis. Cases of dermatitis herpetiformis showed decided improvement; slight temporary improvement was noted in cases of neurodermatitis, while the treatment failed to be of value in weeping eczema.

A cure of a case of pemphigus following a single injection of human blood was reported by Praetorius.[10] Six cases of this obstinate disease were treated by von Zumbusch[11] partly by injections of human blood and partly by serum, with no result in some and improvement or cure in others.

The report of Ullmann[12] on the serum treatment is less favorable, poor results being obtained in seven cases of dermatitis herpetiformis and no result in eczema of children, though on the other hand, comparatively good results were noted in pruritus.

While all of the foregoing cases were treated with human serum or blood obtained from other individuals (homologous serum) Spiethoff[13] experimented with injections of the patient's own serum (autogenous serum), using this method alone and in combination with homologous and foreign serums. By such combinations of treatment he obtained good results in prurigo, dermatitis herpetiformis, chronic urticaria, pruritus and psoriasis. Other allied therapeutic measures that have been tried in the

* Because of lack of space this article is abbreviated in THE JOURNAL by omission of a table. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Mayer, A., and Linser, P.: Ein Versuch Schwangerschaftstoxikosen durch Einspritzungen von Schwangerschaftsserum zu heilen, München. med. Wchnschr., 1910, lvii, 2757.

2. Mayer, A.: Normales Schwangerenserum als Heilmittel gegen Schwangerschaftsdermatosen im besonderen und Schwangerschaftstoxikosen überhaupt, Zentralbl. f. Gynäk., 1911, xxxv, 350; Weitere Erfahrungen über die Behandlung von Schwangerschaftstoxikosen mit normalem Schwangerenserum, ibid., 1911, xxxv, 1299.

3. Freund, R.: Serumtherapie bei Schwangerschaftstoxikosen, Med. Klin., 1911, vii, 371.

4. Linser, P.: Ueber Hauterkrankungen bei Schwangerschaft und deren Heilung, Dermat. Ztschr., 1911, xviii, 217.

5. Fetzer: Die therapeutische Verwendung von normalem Schwangerenserum nebst Versuch einer Erklärung auf experimenteller Grundlage, Deutsch. Gesellsch. f. Gynäk., 1911, xiv, 712.

6. Veiel, F.: Ein Beitrag zur Serumbehandlung der Schwangerschaftsdermatosen, München. med. Wchnschr., 1912, lix, 1911.

7. Rübsamen, W.: Weiterer Beitrag zur Schwangerschaftsserumtherapie der Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1913, xxxix, 931.

8. Linser, P.: Ueber einige mit Serum geheilte Fälle von Urtikaria, Med. Klin., 1911, vii, 136; Ueber die therapeutische Verwendung von normalem menschlichen Serum, Verhandl. d. Cong. f. inn. Med., 1911, xxviii, 125; Ueber die therapeutische Verwendung von normalem menschlichen Serum bei Haut- und innerlichen Krankheiten, Arch. f. Dermat. u. Syph., 1912, cxiii, 701.

9. Heuck, W.: Erfahrungen über Behandlung Hautkranken mit Menschenserum, München. med. Wchnschr., 1912, lix, 2608.

10. Praetorius, G.: Pemphigus malignus durch einmalige intravenöse Blutinjektion geheilt, München. med. Wchnschr., 1913, lx, 867.

11. Von Zumbusch, L.: Serum und Blutinjektionen bei einigen Fällen von Hautkrankheiten, Wien. med. Wchnschr., 1913, xxxviii, 2348.

12. Ullmann, E.: Ueber die therapeutische Anwendung von normalserum bei juckenden Dermatosen, Arch. f. Dermat. u. Syph., 1913-14, cxviii, 125.

13. Spiethoff, B.: Zur therapeutischen Verwendung des Eigenserums, München. med. Wchnschr., 1913, lx, 521.

past four years include the treatment of various dermatoses by autogenous blood (Ravaut,[14] Spiethoff[15]), homologous blood (Praetorius), serum from the umbilical cord (Franz[16]) and the serous contents of pemphigus bullae, reinjected in patients with this disease (Holobut and Lenartowicz[17]).

Previous to Spiethoff's publications the result of the serum treatment of psoriasis had not been favorable. Heuck found the treatment of no value in this disease and thought that a beneficial action was not to be expected. In the treatment of psoriasis by autogenous serum, Spiethoff states that in addition to failures he obtained a noteworthy result in two cases. In one case of extensive psoriasis geographica "the patches became pale and flat after the third injection." In another case the involution of the patches began after the first injection of 13 c.c. of inactivated autogenous serum and disappeared after five injections. It was necessary in this case, however, to use local treatment by salves in addition, before a complete disappearance of the eruption was obtained. Spiethoff also mentions a patient with psoriasis applying for treatment for a very severe dermatitis, probably from the use of

Fig. 2.—Case 5, three weeks after treatment.

chrysarobin. Serum treatment was given, after which the dermatitis subsided and the psoriasis disappeared. It may be of interest to add that in the treatment of three cases of psoriasis by autogenous blood, Ravaut failed to see any change in the eruption, although the itching was lessened.

Gottheil and Satenstein[18] were the first in this country to experiment with the treatment of skin diseases by human serum, confining their work entirely to the use of active autogenous serum. In their first report on this subject, they stated that "the apparent results from the serum treatments were most noticeable in the psoriasis cases." In a later communication[19] they stated that their results in twelve cases of this disease had been "uniform and extremely satisfactory." In all of these cases the serum treatment was followed by local inunctions of a weak chrysarobin ointment.

My own experience with autogenous serum in psoriasis is derived from the treatment of twenty-eight patients, of whom seventeen were females and eleven males, varying in age from 11 to 54 years. The different forms of the disease such as the guttate, nummular and diffuse were all represented and included varying

Fig. 3.—Case 10, before treatment.

grades of severity. The duration of the eruption varied in the different cases from 2 to 45 years. All of the patients were treated in an ambulatory manner, with the exception of two, who remained in the hospital for two weeks. The majority belonged to the dispensary class and with few exceptions were fairly faithful in carrying out the treatment.

In all except one case, at least three injections of serum were given, at an average interval of from three to five days. This was immediately followed by the local use of a 10 per cent. chrysarobin ointment, the action of which was increased in certain cases by covering the skin with rubber cloth. No internal medication was given and no particular stress was laid on the diet.

The results of the treatment in general were very satisfactory and in some of the cases decidedly brilliant. The crucial test of the combined serum and local treatment was shown by cases that had been *previously treated by chrysarobin alone*. Some of these patients had been treated by my father, Dr. George Henry Fox, and myself by vigorous inunctions of chrysarobin combined with dietetic methods, and had failed to show practically any response. After the serum injections in combination with the local treatment the results in certain cases were astonishingly good.

Fig. 4.—Case 10, four weeks after treatment; free of psoriasis for first time in forty-five years.

An idea of the favorable results may be obtained by reading some of the enthusiastic remarks made by the patients themselves. A woman (Case 4), the wife of a physician, had suffered from ten previous attacks of psoriasis and was thoroughly familiar with all of

14. Ravaut, P.: Essai sur l'autohématothérapie dans quelques dermatoses, Ann. de dermat. et de syph., 1913, iv, Series 5, 292.
15. Spiethoff, B.: Zur Behandlung mit Eigenserum und Eigenblut, Med. Klin., 1913, ix, 949.
16. Franz, R.: Mit Nabelschnurblutserum geheilte Schwangerschaftsdermatose, Zentralbl. f. Gynäk., 1912, xxxvi, 913.
17. Holobut, T., and Lenartowicz, J. T.: Versuche einer Pemphigusbehandlung mit dessen Blaseninhalte, Dermat. Wchnschr., 1914, lviii, 41.
18. Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, Med. Rec., New York, 1914, lxxxv, 620.
19. Gottheil, W. S., and Satenstein, D. L.: The Autoserum Treatment in Dermatology, THE JOURNAL A. M. A., Oct. 3, 1914, p. 1190.

the usual methods of treatment. She was delighted at the rapidity with which her eruption disappeared, which she characterized as being "perfectly marvelous." Another patient (Case 10) thought the result was "like magic" and added that he had tried "all kinds of medicines and doctors in Europe and America for forty years without any result." Another woman (Case 12) said she "never saw chrysarobin take hold so rapidly and never saw the eruption fade so fast as

Fig. 5.—Case 11, before treatment; duration, three years.

from the present treatment." The daughter of the patient (Case 13) also stated that "although this was by all odds the worst attack she had ever had, the eruption had never disappeared so quickly." Another patient (Case 16) who had suffered from psoriasis for thirty years said that he could not remember when the disease had been so well under control. In his case it should be added that chrysarobin had been previously used on and off for a period of four years. One of my patients (Case 11) had been previously treated for two months with chrysarobin ointment, covered a good deal of the time by an impermeable suit of rubber cloth. In spite of this vigorous treatment the result had been most discouraging. After he had received three injections of autogenous serum, however, and had then been treated by chrysarobin, a lively dermatitis was caused and the greater part of the eruption promptly disappeared. Three other cases that we had previously treated seemed to be immune to any local action of chrysarobin, as it was apparently impossible to produce the slightest dermatitis from a 10 per cent. or 20 per cent. ointment. In one of these cases (Case 5) the result of the new treatment was certainly brilliant, while in two others (Cases 1 and 2) it was gratifying to the patients even though a certain amount of the eruption still remained. One of my patients (Case 28) who seemed most pleased with the treatment was a man who was relieved of his psoriasis for the first time in twenty-four years. He had been vigorously treated on former occasions by chrysarobin alone, but had never seen such a rapid effect from its use as at present when the combined method of treatment was employed.

It might be thought that the good results were not due to the serum injections but simply to the chrysarobin, as the latter drug was used in every case. To prove that the serum injections in some cases at least were responsible for the improvement it is only necessary to repeat that these cases had previously been treated with little or no result with chrysarobin and it was only when the inunctions of this remedy were combined with serum injections that the favorable results were obtained.

From the injections alone I was unable to see any decided effect on the lesions except in one case which might have been a coincidence. An improvement after injections alone was, however, noted by Gottheil and Satenstein, while as above stated in a case of Spiethoff's the attack of psoriasis was entirely relieved by the sole use of the injections.

No ill effects from the serum treatment were observed except in one case (Case 4) in which the third injection was followed by a rather violent urticaria lasting a week. Urticarial rashes were also observed by Linser in several cases, generally lasting from twelve to twenty-four hours. In the case of autogenous serum injections, it is hardly conceivable that any serious ill effects could result when proper aseptic precautions were observed. This cannot be said of the use of a foreign serum in which the possibility of anaphylaxis is always present. In the case of injections of homologous serum the possible transmission of syphilis or tuberculosis must be considered. For this reason the autogenous serum has an advantage over homologous serum and it has the further advantage of greater simplicity, as the patient who receives the injection is also the donor of the blood.

The technic of the injections is perfectly simple for those who have had experience in making venipunctures or giving intravenous injections. For those who have not had this practice it cannot be called difficult. My own plan has consisted at each sitting in drawing 50 c.c. of blood from the cubital vein, by means of a MacRae needle, into a sterile cylindrical glass bottle. The bottle and its contents were then properly balanced

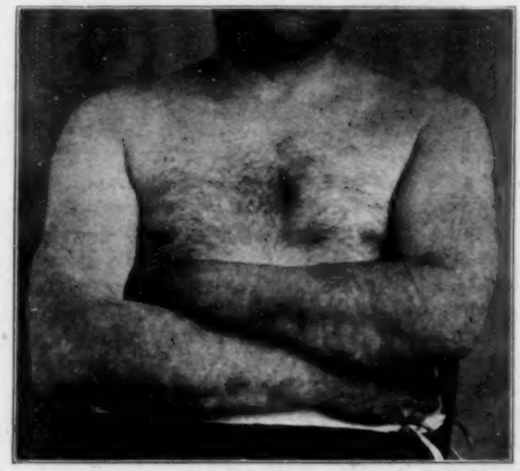

Fig. 6.—Case 11, three weeks after treatment.

and placed in an electric centrifuge having a speed of eighteen hundred or more revolutions a minute. When the serum was thoroughly separated from the corpuscles and fibrin it was drawn off into a glass syringe and injected without delay, either intravenously or intramuscularly. The amount of serum that was generally obtained from the 50 c.c. of blood varied between 15 and 25 c.c., the latter being the maximum. In every case the serum was injected in an active state. As a rule the entire procedure of drawing the blood and

injecting the serum was completed in half an hour or less.

The question as to why injections of human serum should have a curative action in certain dermatoses is certainly a difficult one to answer. That such an effect is not simply due to the power of suggestion was shown by Linser[20] in control cases in which salt solution was injected in place of the serum. The same writer also suggested that the action of the serum might be due to the addition of complement to the blood of a patient in which this substance was deficient. Ullmann, however, by titration, failed to find any deficiency of complement in his patients who responded well to treatment. Furthermore, it was found that good results were obtained by the use of serum that had been entirely deprived of complement (inactivated). That this suggestion of an addition of complement does not apply to patients treated with their own serum is, of course, self evident.

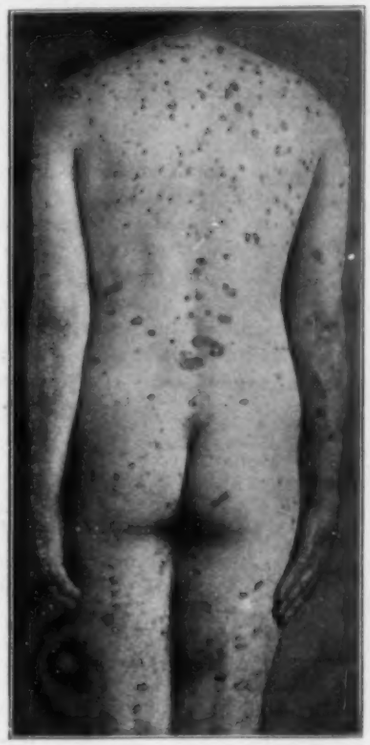

Fig. 7.—Case 28, before treatment.

It was also suggested by Linser that the beneficial results might have a connection with the eosinophil cells. He found that with the lessening of the intensity of the eruption there was a lessening of the number of eosinophil cells, while Ullmann, on the other hand, failed to find a regular decrease in their number after serum treatment but "rather in certain cases an increase." As we know so little of the real significance of the eosinophils, it seems idle to speculate at present on their causative relation to the serum treatment of skin diseases.

The idea naturally presents itself that the beneficial action of autogenous serum injections might be solely due to the bloodletting. That this therapeutic measure may lessen the intensity of some inflammatory skin diseases there can be no doubt; that the results obtained were due, however, to the injections of serum and not merely to the venipuncture has been shown by comparative tests with the two methods of treatment.

The results of treatment of the toxic dermatoses by serum of other healthy pregnant women were thought at first to be due to a specific reaction of the serum. That this was not the case seems apparent from the fact that similar results in toxic dermatoses of pregnancy were obtained by Freund[21] with horse serum, by Hofbauer[22] with pituitary extract and by Rissmann[23] and Eichmann[24] with Ringer's fluid (solution of sodium, calcium and potassium chlorid and ammonium carbonate).

In speaking of his case of pemphigus malignus cured by a single injection of human blood, Praetorius suggested that the curative substances were perhaps protective ferments in the sense of Abderhalden, whose duty it was to prevent the further formation of harmful intermediary products of metabolism or perhaps to destroy injurious secretions of the ductless glands.

Finally, Luitlen[25] showed by animal experimentation that inflammatory reactions of the skin to external irritants could be favorably influenced by injections of homologous, autogenous or foreign serum or homologous blood. Further experiments showed that parenteral introduction of colloidal substances, even when not protein in nature, as colloidal silicic acid and soluble starch, could also influence the inflammatory condition of the skin. He concluded that the action of the serum in the treatment of skin diseases had nothing to do with its antigenic function, but that the introduction into the system of a colloidal complex brought about changes of a character as yet unknown. Spiethoff,[26] whose investigations had been entirely clinical, agreed with the conclusions of Luitlen.

From the foregoing it is evident that we are not in a position to give an entirely definite explanation of the action of human serum in the treatment of psoriasis. I can merely say that in some unknown way the serum injections seem to have caused changes which make it possible for the chrysarobin inunctions to bring about better results than they could otherwise have attained.

The results of treatment recorded in this paper (see

Fig. 8.—Case 28, one month after treatment; free of psoriasis for first time in twenty-four years.

20. Linser, P.: Ueber neuere Bestrebungen zur Heilung von Hautkrankheiten durch Blutverbesserung, Samml. zwangl. Abhandl. a. d. Geb. d. Dermat. Syph., 1913, ii, No. 8.

21. Freund, R.: Mit Pferdeserum geheilte Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1911, xxxvii, 2419.

22. Hofbauer, J.: Schwangerschaftstoxikosen, Deutsch. med. Wchnschr., 1910, xxxvi, 1643.

23. Rissmann: Intramuskuläre Infusionen von Ringerscher Lösung bei Toxikosen, namentlich bei den Toxikodermien von Schwangeren und Wöchnerinnen, Deutsch. med. Wchnschr., 1912, xxxviii, 1140.

24. Eichmann, E.: Schwangerschafts-Toxikodermien durch Ringersche Lösung geheilt, München. med. Wchnschr., 1913, lx, 183.

25. Luitlen, F.: Veränderungen der Hautreaktion bei Injektion von Serum und kolloidalen substanzen, Wien. klin. Wchnschr., 1913, xxvi, 653; Ueber Beeinflussung der Hautentzundungen, Wien. med. Wchnschr., 1913, lxiii, 2375; Ueber die Einwirkung parenteral eingeführter Kolloide und wiederholte Aderlässe auf die Durchlässigkeit der Gefässe, Med. Klin, 1913, ix, 1713.

26. Spiethoff, B.: Die Herabsetzung der Empfindlichkeit der Haut und des Gesamtorganismus durch Injektionen von Eigenserum, Eigenblut und Natrium nucleinicum, Dermat. Wchnschr., 1913, lvii, 1227; Methode und Wirkung der Eigenserum und Eigenbluthandlung nebst Bemerkungen zur Umstimmung der Hautreaktion durch Eigenstoff- und Natriumnucleininjektionen, Med. Klin., 1913, ix, 1845.

accompanying table) refer to the effect of the combined serum and chrysarobin method on individual attacks of psoriasis. For this purpose it seems to me that the new method is of real value. As to its possible effect in preventing recurrences of the disease, the time is too short for conclusions to be drawn. To hope for such a result would be too much to expect in a disease so peculiarly prone to recurrence. Even if future attacks cannot be prevented, in the present state of our knowledge, it is at least a satisfaction to have an improvement in the method of treating the individual attacks of such an obstinate and chronic disease as psoriasis.

CONCLUSIONS

As a result of my own observations in a limited number of cases I would draw the following conclusions:

1. Autogenous serum, when used alone, does not appear to be of value in the treatment of psoriasis.

2. It is of decided value in many cases when used in conjunction with chrysarobin. Obstinate cases of psoriasis that have long resisted vigorous treatment with chrysarobin ointment will often yield to this remedy when injections of autogenous serum are given.

3. Intravenous injections of autogenous serum, if properly given, are entirely devoid of danger.

4. The technic of preparing the serum and giving the injections is comparatively simple.

I wish to express my thanks to Drs. Edward Pisko and Benjamin F. Ochs for their kindness in supplying some of the material.

[NOTE.—Since this article was submitted for publication a communication has appeared in the *Journal of Cutaneous Diseases* (1914, xxxii, 780) by Hilario entitled "A Contribution to the Autoserotherapy of Certain Diseases of the Skin." Hilario reports excellent results in the treatment of five cases of psoriasis by the combined method of injections of autogenous serum and inunctions of a weak (2 per cent.) chrysarobin ointment. A comparatively large number of injections was given (as high as ten in one case) the amount of serum varying from 15 to 40 c.c. Hilario concludes that "The autoserum plays a very active influence in the treatment of psoriasis in the way of reducing the resistance of the psoriatic tissue, thereby rendering it more apt to be acted on by the chrysarobin, in weak percentages."]

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Scientific and Literary Imagination.—The imagination of Darwin, of Pasteur, for example, is as high and productive a form of imagination as that of Dante, or Goethe or even Shakespeare, if we regard the human uses which result from the exercise of imaginative powers; and mean by human uses not merely meat and drink, clothes and shelter, but also the satisfaction of mental and spiritual needs.—Charles W. Eliot.

OBSERVATIONS ON MILITARY SURGERY IN THE EARLY WEEKS OF THE WAR

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It has been said by a number of capable military surgeons within the last decade that the treatment of modern gunshot wounds would be a much simpler proposition now than in former years. It was shown that in the Spanish-American and the Russo-Japanese wars the effect of the modern high-speed pointed rifle bullet was a humane one. The wounds were small, non-lacerated, and above all, clean, with comparatively few exceptions.

This might have been true formerly, when the number of men engaged was comparatively few, when transportation was rapid and when there was little use of the modern high-powered shrapnel shells, but from personal observation of the wounded in France during the early weeks of the war I can state without reservation that this is not the case.

Fig. 1.—Ricochet or deformed bullet. This bullet had gone through the skin of the side of the thorax and then lodged in the elbow between the skin and the olecranon. The bullet had enough force left to fracture the humerus but not to shatter it.

Many surgeons have made the observation that in the month of August a large number of those injured by rifle bullets had absolutely clean wounds, especially when there was no involvement of bony structures. Since then the daily life of the soldier in the field has been an extremely arduous one. Facilities for personal cleanliness have been practically nil, and the average soldier's clothing in the field is in a frightfully dirty condition. This is well illustrated by the remark of one of the wounded who was being undressed on his arrival at a base hospital in Paris in November: he said that the trousers that were then being removed were the ones he started to the front in in the early days of August, and that he had not had them off once since then. The hospital bed was the first one he had been in since he had been called from his own home by the mobilization. It is hard to conceive how a bullet traversing such clothes as these can stay aseptic.

Shrapnel wounds — those caused by the lead shrapnel balls or parts of the casing of the shell — are, of course, attended by a greater amount of infection; on account of the greater size of the ball or shell fragment and their slower velocity, more clothes or other infectious material are brought into a wound, which is very much bruised and lacerated. Probably all these infections occur at the time that the man is wounded. Of course, there are a great number of wounded who

cannot be immediately removed from the firing line and who lie for hours exposed to the rifle and shell fire of both their own men and the enemy, but luckily these are the exception. Most of the wounded are first dressed at the front by the field surgeons, the great majority of whom do their work with judgment and ability notwithstanding the surroundings, with little equipment and amid danger.

Fig. 2.—Typical butterfly fracture from bullet traveling at high speed.

Fig. 3.—Fracture of humerus from shrapnel.

Transportation of the wounded, considering all the difficulties and the great number to be transported, is being creditably done in France. The more seriously injured are being taken care of in the so-called "flying" ambulances which always stay within a few miles of the firing line. Those less seriously injured are removed to the trains, which now are fairly well equipped with the necessary supplies, and well heated and lighted. In charge of each train is an army surgeon, sometimes with assistants, and practically always with orderlies who attend to the comfort and minor wants of the men. Dressings are done *en route*, and these are practically always in good condition on the patient's arrival at the base hospital.

The military authorities up to the present have shown a desire to send as many wounded as possible to the south of France, and to keep the hospitals in the North empty, but at practically all the more important cities along the railroad there are temporary hospitals at the station into which those who are too sick to stand further traveling are taken, and then transferred to a permanent hospital in that city. At almost all stations on the railroads leading from the war zone kitchens have been established by the Red Cross, and the "secours aux blessés militaires," where hot food is supplied to the wounded.

Then, too, from the Pas de Calais district, where the fighting of late has been so heavy, a great number of wounded can be evacuated by the hospital ships to such ports as Cherbourg and Havre, further south, or directly to England. These ships are well equipped, are large and comfortable, and each has a complete staff of surgeons who do whatever emergency operating there is to be done on board. All the patients are dressed as often as necessary, and on some of the ships there is a Roentgen-ray plant where every wounded man is roentgenographed, the plate developed and sent with him to the base hospital when he disembarks.

Practically all the wounds seen are from rifle bullets and shrapnel. One saber wound was observed at the American Ambulance at Neuilly[1] since the beginning of the war; there were no bayonet wounds. Accidental injuries, such as simple fractures of the leg or foot from being thrown from a horse, were sometimes seen, but were very rare.

RIFLE BULLET WOUNDS

The wound of entrance of the pointed .30 caliber cupronickeled steel rifle bullet now used by the Germans is generally a small one—smaller than the diameter of the bullet—while that of exit is generally larger. The course of the bullet is generally straight, but of course one that is nearly spent may be deflected or even stopped by a strong bone such as the femur. Large lacerated wounds are sometimes made by the so-called "ricochet" bullet (Fig. 1), that is, one that has struck a hard substance and has been deformed by bursting its jacket and then rebounding, striking the person. These are the wounds that give rise to the report that the enemy is using dum-dum or explosive bullets. In order to prove the use of such it would be necessary to actually remove such a bullet from a wound.

Fig. 4.—Shrapnel wounds of the foot.

The effect of the regulation German rifle bullet on each part will later be taken up, but its effect on bone

1. "Ambulance" is the name given to the military hospital; Neuilly is a suburb of Paris.

must be discussed here. When a strong bone, such as the humerus or femur, is struck by a bullet within its zone of maximum speed (5,465 yards), one of two things may happen: Either the bone is cleanly perforated — and this is very rare — or else it is completely shattered. In the latter case we have the typical butterfly fracture, as is shown in Figure 2. In these cases there is such a transmission of energy from the bullet traveling at high speed that extensive comminution results. Near the center of the fracture the fragments are apt to be small, but long fissures extend up and down the shaft of the bone—in some cases into the epiphyses. These fissures make some of the fragments of a large size. On the other hand, when a bullet at the end of its trajectory strikes a bone, a simple fracture results, which very much resembles those caused by indirect violence in occupational injuries. In one instance the bullet, after striking the bone, had its force so nearly expended that it remained in the limb. Short flat bones, such as the clavicle or ribs, are generally shattered, especially when the blow is a glancing one. Small bones like the tarsus or carpus are most often extensively comminuted.

Fig. 5. — Fracture of femur from shrapnel.

SHRAPNEL WOUNDS

Wounds from shrapnel are, in general, more severe than those from rifle bullets. A shrapnel wound is one made by a shrapnel ball, or part of the casing of the shell. The former is a solid lead ball of about .50 caliber, forty balls to the pound. When the shell explodes these balls are scattered in all directions in the so-called cone of dispersion, but not at a very great velocity. The shell itself is shattered into innumerable pieces of varying sizes. Hence it can be readily seen that shell wounds result from large missles traveling at a comparatively low rate of speed, and are therefore characterized by a large amount of laceration to the parts. Perforating shrapnel wounds are rarely seen, in most cases the missiles lodging in the tissues and forcing in with them a large amount of clothing or parts of the soldier's equipment. These wounds, of course, vary greatly in size and are practically always multiple — seventy-five having been counted in one soldier. The destructive effect of shrapnel on bones is very great. Here the butterfly fracture is hardly ever seen, except when the bone is struck by one piece. In most cases there is an extensive comminution amounting really to a grinding of fragments, being extremely small, about the size of pebbles (Figs. 3, 4 and 5).

VARIOUS INJURIES

The exact statistics as to the relative frequency of injuries to various parts will not be brought out till after the close of the war, but it might be well to describe briefly here the more characteristic injuries of each part.

One saber cut of the scalp, which was a simple wound without fracture of the skull, was noted. One case in which a rifle bullet had completely traversed the skull from side to side was seen at the Beaujon Hospital on the service of Dr. Tuffier, and was the only one of its kind observed. Cases of furrow wounds of the skull were not uncommon; in most of these the furrow was anteroposterior and generally on the side of the head; they were most often accompanied by an extensive fracture of both inner and outer tables, but very little comminution was present. In one case of this class in which I operated at the American Ambulance, there was an extensive right-side extradural and subdural clot. There was a complete motor paralysis of the opposite arm and leg, which cleared up two weeks after the removal of the clot. Compound fractures of all parts of the skull were very frequent from shrapnel wounds, in which a portion of the overlying tissues had been torn away. Many cases were seen in which a portion of the soft

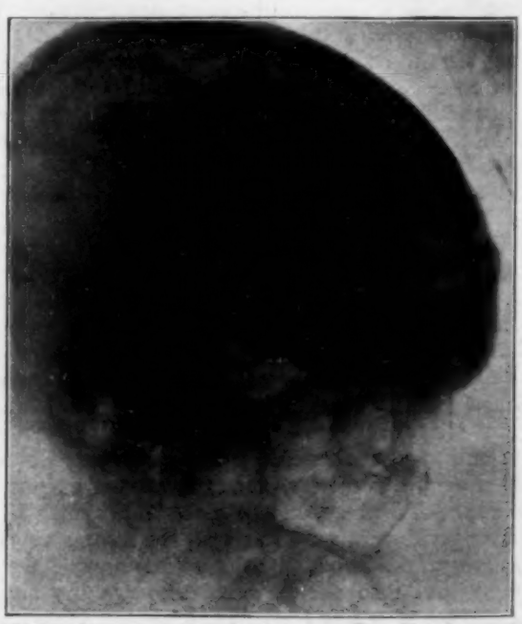

Fig. 6.—Abscess of frontal lobe of the brain with drain in position.

parts of the forehead, together with an eye, had been completely destroyed by shrapnel. Here there was generally a fracture of the frontal bone through which brain tissue exuded. In one patient, received after he had been in a hospital at Arras for a week subsequent to being wounded, I discovered at operation an abscess

in the frontal lobe on the right side. There were also some small particles of shrapnel behind the right eye (Fig. 6).

Wounds of the face and eyes by rifle bullets were not uncommon, especially since a great deal of the fighting has been done in trenches. Two cases in which the bullet had entered one cheek, completely

Fig. 7.—Shrapnel ball in pericardial sac. The picture is not very distinct as the ball was moved by every heart beat.

traversing the head and coming out at the opposite mastoid process, were seen. Both of these were uncomplicated, except for a complete facial paralysis on the side of the wound of exit. Several cases of the destruction of one or both eyes from bullets coming from the side were also observed. Shrapnel wounds of the face were one of the commonest of injuries. Some of the patients simply had very small particles of shell-casing embedded in the skin. Many others had large portions of the face destroyed, and of these there were numerous cases of injuries to the eyes and nose.

Fractures of the inferior maxilla by both bullets and shrapnel were numerous. They were all very complicated cases, as they were compound either externally or toward the mouth, or both, and the fractures were practically always multiple. In the shrapnel injuries part of the chin or side of the face was often torn away, and in many cases some of the underlying bone was gone. In most of the Paris hospitals these cases were turned over to the dental surgeons, whose work was excellent, and whose results were often brilliant. A number of very complicated fractures with loss of bone and overlying tissues were seen at the Beaujon hospital. Here the plan of treatment was to apply an interdental wire splint immediately on the patient's entrance. The wound of the soft parts was dressed until infection ceased, and any operation in the way of removal of dead bone, or plastic work, was done only when the wound was perfectly clean. This method apparently gave better results than when the interdental splint was applied only when the wound was clean.

Wounds in the neck are comparatively rarely seen. One artillery-man was seen with a large lacerated wound in the middle of the neck from a piece of shell. When taken off the field this patient seemed to be breathing his last. As the piece of the shrapnel was visible through the external wound, it was removed by the field surgeon. The patient immediately began to breathe normally, and it was then discovered that the phrenic nerve had been pressed on. In this case there was surprisingly little loss of blood. Another patient admitted to the American Ambulance with a bullet wound in the neck was almost exsanguinated, and it was found on necropsy that the vertebral artery had been completely severed. Large hematomas of the neck were sometimes seen, and it was found best in all these patients to cut down and ligate the injured vessels immediately. One or two isolated cases of injury to the cervical and brachial plexuses were noted, but were very rare.

Wounds of the chest were not common. Penetrating rifle wounds were sometimes seen. In some the bullet had completely traversed the thorax, and in a few it had remained in it. In all of these cases there was usually an extensive hemothorax, which practically always disappeared slowly of itself, or after a few aspirations. Only one case of empyema was observed, and in this case there was a perforation of the chest wall by a piece of shrapnel 1 by 2 inches in size. Practically all the chest cases showed a complicating fracture of one or more ribs with a considerable amount of comminution. A few had signs of pulmonary consolidation, which lasted a short while and cleared up.

Two very interesting heart cases were seen. In one a shrapnel ball had entered the left lumbar region,

Fig. 8.—Bullet from a machine gun lodged in the abdominal wall, between the peritoneum and the internal oblique muscle.

completely traversing the left side of the abdomen, and was found by roentgenoscopic examination lying free within the pericardial sac. The ball moved freely up and down at every movement of the heart and apparently caused the patient no inconvenience (Fig. 7). The other case of this kind was seen at necropsy

in a patient who lived only a few days after entering the hospital. Here a large piece of shrapnel had completely traversed the abdomen and lodged in the heart muscle.

A surprisingly large number of patients had non-penetrating wounds of the abdominal wall. Many of these simply had very small particles of shrapnel

Fig. 9.—Shrapnel in perineum.

embedded under the skin. In some the fragments of shrapnel were quite large, the largest being 1¾ by 2½ inches in size. Several cases in which bullets had entered the side of the abdomen and had pursued their course under the skin were noted. In one instance the bullet of a rapid-fire gun entered the right upper abdomen over the eighth rib in front. On operation, I found it in the left iliac region between the peritoneum and the internal oblique muscle (Fig. 8).

That the modern rifle bullet is not a harmless one when it penetrates the abdomen now seems to be an indubitable fact. The typical penetrating wounds are not seen at the base hospitals, or if they are they are seen only in the stage in which a localized abscess has been formed. From accounts of a number of men who have been doing active service at the front, few laparotomies are done there on account of inadequate facilities. The opinion of most of these men is that there is little effort on the part of the mucous membrane to close up the perforation. Most patients with abdominal wounds are now being transported to the nearest base hospital in a sitting position, and there treated expectantly. Luckily localized abscess formation is the rule, and in no case of this kind is operation performed at the base hospital unless there is a definite abscess. One case was seen at the American Ambulance in which the bullet had entered the left iliac region and had made its exit through the middle of the sacrum. This patient had no abdominal symptoms for almost one month, when an abscess began to develop on the left side. A number of cases of fecal fistulas were seen which had been evacuated to the base hospitals from those at the front after the acute symptoms had subsided. The majority were low down in the iliac, or lumbar regions, but several unusual ones were seen higher up in the abdomen, the highest being in the sixth intercostal space in the anterior axillary line.

Bullet wounds in the lower part of the abdomen anteriorly or through the buttocks posteriorly have been found to be especially interesting, and particularly fatal. The reason for this is that here there is often a perforation of the large intestine with a resulting abscess. Apparently a retroperitoneal cellulitis is set up in the neighborhood, so that a large blood-vessel may be eroded and a fatal hemorrhage ensue.

Wounds of the perineum are comparatively rare, though several cases were seen in which shrapnel balls or shell fragments were found lodged there (Fig. 9). The greatest amount of destruction of tissue from shrapnel observed was seen in a case of this kind. Practically all of the perineum had been destroyed here and a large part of the tissues on the inner aspect of both thighs.

By far the most frequent and most interesting cases from a surgical point of view that the war has brought out so far are those of injuries to the extremities. Here again the very superficial injuries from rifle bullets, and shrapnel must be emphasized. Some of the very superficial injuries from rifle bullets, or some of the more superficial wounds *en séton* may sometimes remain clean, but practically every other wound of an extremity from either bullet or shrapnel is infected at this stage of the war. It is for this reason that the compound fractures of the humerus and femur are so very serious, and the latter much more so than the former. When a fracture occurs in either of these bones very long fissures are most often present. There is infection of the soft parts and bone from the very beginning. In the former the infection seems to travel along the fascial planes between the muscles, so that abscesses may subsequently be found at a considerable distance both from the fracture and the wound of entrance. In the bone an acute osteomyelitis starts in at the main point of fracture and slowly spreads along each of the fissures. Hence we see the small fragments extruded first and later the large ones.

Fig. 10.—Metal shoe-lace clasp driven into the leg by a shell explosion.

Several instances have been noted in which the fissures have extended into the epiphyses, and on account of this osteomyelitis we find an infected joint in a rather short period of time. Where the diaphysis of a long bone is struck there is extensive comminution, but fissuring into the shaft rarely occurs. In these cases, of course, infection of the joint is immediate. Com-

pound infected fractures of the humerus, even when accompanied by an extensive loss of bone and soft parts, yield much more readily to treatment than do similar injuries to the femur. Whether this is due to a better blood-supply to the upper extremity, or whether the foyer of fracture is easier of access here will not now be discussed, but the fact remains, and will probably become more and more evident during the course of the war. Amputation of the arm has rarely to be resorted to unless there is injury to the brachial artery high up, or unless some complication, such as gas gangrene, sets in. Amputation through the thigh, however, must be done in a fairly large proportion of cases, as it must be borne in mind that these patients become rapidly septic so that the first indication is to save the patient's life, the second to save the limb and the third to preserve as much function as possible. Conservatism in the treatment of these fractures is the rule in France and England. I have it on very good authority that such is not the case in the German army.

Conservatism is, of course, to be encouraged, but the treatment of these fractures is one that requires absolutely the best of surgical judgment. Good and efficient drainage must be established early and be maintained. Loose fragments of bone or pieces of shrapnel must be removed. The postoperative treatment is more important than the operation. The limb must be immobilized, and in the case of the femur, extension must be employed. A plaster hip spica, although carrying out both immobilization and extension, has been found to be impracticable. It soon becomes loose as the swelling of the limb decreases, and is dirtied in a very short time, as the amount of discharge from these wounds is enormous. The simplest method and the most practicable consists in extension with weights and immobilization by means of wooden splints on a fracture pillow. An idea of the gravity of these fractures, and the difficulties in their treatment, may be somewhat appreciated when it is remembered that these patients have for several months been living under a terrible strain, and often with insufficient food. The reason that conservatism can be used at all is that all these patients are young men.

Of the two dreaded complications of gunshot injuries — tetanus and gas gangrene — it is much too early in the war to speak. The French government had a supply of antitetanic serum on hand, so that it was a rule in many base hospitals that every soldier should be given an immunizing dose on admission. An idea of the comparative rarity of tetanus can be gathered when it is stated that in four hospitals in Paris — each with a capacity of about 400 beds — not one has had more than six cases.

Gas gangrene, however, is much more common and is especially prone to follow shrapnel wounds of the thigh. The methods of treatment differ in various hospitals. Most of the French surgeons do not believe in extremely large incisions for drainage, but make comparatively small ones, which are frequently irrigated with peroxid. Many are in favor of draining and forcing oxygen gas under pressure into the affected tissues for a considerable length of time — from twelve to seventy hours. This can be repeated at intervals if the process does not resolve. Both these methods of treatment have given good results in some cases, but in many others amputation has to be done, and very often this is of little avail.

For the privilege of having been able to operate in and treat a number of the cases mentioned here I wish to thank Dr. Du Bouchet, Surgeon-in-Chief of the American Ambulance at Neuilly. To the many other surgeons in Paris, by whose courtesy I was able to see the cases under their care, my thanks are also due. The roentgenograms reproduced here were kindly made for me by Dr. Jaugeas and Mr. King of the roentgenographic department of the American Ambulance at Neuilly.

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THE RELATION OF POSTURE AND INTESTINAL DERANGEMENTS TO COXITIS*

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BOSTON

The title of this communication is misleading. One has a right to infer that I shall at least attempt to explain the relation of posture and intestinal derangements to coxitis. I shall offer no explanation, however, and there should be an interrogation mark after the last word.

The paper is simply a report and a consideration of three cases in which there was an apparent relationship between faulty posture or intestinal derangements and coxitis, and in which the discovery of this relation made unnecessary any prolonged local treatment of the coxitis. The excuse for its presentation is the hope that not all of those present have noted such an association. If this is so and your experience should tally with mine it is possible that you may occasionally be spared a modicum of anxiety, a few families may be spared the distress which the diagnosis of tuberculosis always brings, and certain patients may be spared a prolonged and irksome treatment which may not be demanded.

You are all familiar with the belief held by Sir Arbuthnot Lane[1] that unless the capacity of the several tissues of the body to resist the entry of certain organisms is inhibited by an auto-intoxication resulting from intestinal stasis, it is impossible for these diseases to develop. Therefore, to meet these diseases he adopts measures to improve the drainage scheme and cites cases in which rapid disappearance of large masses of tuberculous glands in the abdomen has occurred, following disconnection of the large bowel.

Fraser,[2] writing on the types of organism in bone and joint tuberculosis in children, is quite convinced that the more common bovine form enters usually by the mouth in milk. It is probably true that an intestinal stasis favors extension to the bones and joints.

Barrington-Ward,[3] working at Great Ormond Street, reports a case of double tuberculous disease of the hip with sinuses, in which orthopedic treatment had been unavailing, but in which rapid recovery followed a short circuiting operation after the manner of Mr. Lane.

It is not, however, to suggest that faulty posture and intestinal derangements bear a causative relation

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lane, Arbuthnot: Lancet, London, Dec. 14, 1912.
2. Fraser, S.: Brit. Med. Jour., April 12, 1913.
3. Barrington-Ward, L. E.: Surg., Gynec. and Obst., July, 1912.

to tuberculous coxitis that these cases are reported. I should be disinclined to deny the possibility of such a relationship, but in this paper I wish rather to suggest that associated with certain intestinal derangements and faulty posture in children there may exist a toxemic arthritis indistinguishable clinically from tuberculosis of the hip.

Thanks to the work of careful pathologists, among whom your Chairman and honored guest are eminent, we know many of the changes which take place in tuberculous disease of the joints. These changes are fairly constant. Tubercles are present, the synovial membrane proliferates, erosion of cartilage appears, and bone foci follow or antedate the involvement of the synovia.

Poncet[4] and others have described a *rhumatisme tuberculeuse* due to toxins elaborated in, and disseminated from, a tuberculous focus in some other part of the body. If such a condition obtains it is probable that joints thus affected may completely recover if the focus can be eradicated.

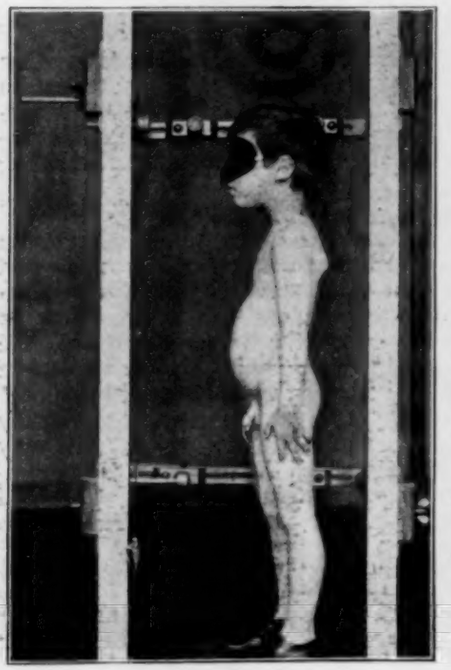

Fig. 1.—Natural standing position, Case 2.

Fig. 2.—Corrected standing position with postural brace, Case 2.

On the other hand, although my experience has not been large, I believe that I have never seen a joint recover complete range of motion or perfect function in which the clinical signs over a considerable period of time were typical of tuberculosis and in which the clinical diagnosis was confirmed by tuberculin reactions, roentgenoscopy or exploratory operation and pathologic examination. I recognize that this experience is at variance with many reported complete cures of tuberculous disease, especially of the hip-joint. My conviction, however, is strengthened by the cases to be reported, which presented quite typical clinical pictures of tuberculosis. All of these to-day have perfect hip-joint motion and perfect function. In all three a carefully done von Pirquet test was absolutely negative, and I am led to believe that a negative reaction is strong evidence that no active tuberculous process of any sort is present.

4. Poncet: Presse Méd., March 26, 1913.

REPORT OF CASES

Case 1.—*History.*—Girl, aged 6 years, 3 months. Oldest child of a physician, carefully brought up under absolutely hygienic surroundings outside the city. She was first seen six months ago with symptoms in the right hip which had been intermittently present for four months. The family history was good. The past history showed digestive troubles dating back to her first year, continued into her second year, and followed by a more or less chronic constipation and occasional "upsets." During the last four months there had been repeated complaints of pain in the right thigh and the right knee, but never any lasting limp. Three days before being seen she had walked two miles and came back tired, with complaint of pain in the thigh near the knee. Her present illness began on the day on which she was seen. She had started to get up at 5 a. m. to urinate and found it was painful to bear weight on her right leg. There had been no night cries or night sweats. There was little pain at rest or on slight passive movement.

Examination. — The general examination by a careful internist had been negative. The child was poorly nourished, with little color. She stood favoring the right leg, with a prominent abdomen, flat chest, hollow back, forward shoulders, prominent scapulae, pronated feet, and an attitude suggestive of congenital visceral ptosis. The length of the legs was the same. The circumference of the calves and thighs was the same on each side. The motions of the spine and all other joints except the right hip were free and painless. The motions of the right hip were limited, painful and accompanied by spasm in extremes of flexion, rotation and hyperextension. Jarring was only slightly painful. Palpation was negative except for some tenderness to deep pressure over the head of the bone.

A definite diagnosis was withheld.

Treatment and Subsequent History.—Recumbency in the open air was advised, in positions to stretch out the flat chest and tighten the lax abdominal wall. The child was to assume twice a day for five or ten minutes an inverted position with thighs on the low bed and head on a pillow on the floor; mechanical cathartics, liquid petrolatum and agar-agar were ordered, and she was measured for a back brace with abdominal pad to correct the standing position, support the abdomen and maintain proper posture. The pronation of the feet was corrected. For one week the symptoms remained about the same with some diminution of pain and sensitiveness. There developed 0.5 cm. atrophy of right calf. Excellent roentgenograms of the two hips on the same plate and of the two hips singly were negative as to bone disease. The von Pirquet test made a little later was absolutely negative. The child was gotten up with the brace, but without protection to the hip-joint, and exercises to improve her posture and abdominal and back musculature were prescribed under careful supervision.

There was rapid improvement in nutrition and color, together with a complete disappearance of objective and subjective symptoms in the right hip-joint. An appearance of health not before present gradually ensued and was note-

worthy. Four months later the patient, after some error of diet, had a severe urticaria and went for several days without her brace or exercises or the assumption of the corrective positions. Within a few days there was an acute digestive upset, but without symptoms in the hip except perhaps a slight guarding.

At present she is active, faithful to exercises and positions, wearing the brace half the day, and without subjective symptoms. The right hip has normal motion in all directions. The thighs and calves measure the same on the two sides. The right leg is now nearly a centimeter longer than the left, presumably from the stimulation of epiphyseal growth caused by the toxemic arthritis.

CASE 2.—*History.*—Patient of Dr. F. W. Taylor of Cambridge, boy, aged 4 years, 5 months. Oldest child of a man of leisure, carefully brought up under hygienic surroundings in the outskirts of a city. He was first seen five months ago for symptoms in the right hip which had been intermittently present for one year. The family history is negative except that the mother may be described as delicate. The past history showed mild digestive troubles, perhaps not more than in many children, but for over a year the occasional association of pain in the knee with these upsets. This pain usually occurred at night and amounted to typical night cries. There had been no limping in the morning which followed these first attacks of night pain. In the spring of 1913 he had two attacks of bronchitis and croup, and has seemed less well ever since. During the summer, six months before being seen, there had been a very acute digestive upset amounting to almost complete obstruction. Since this time there has been a tendency to constipation. One month before being seen the child had had a slight fall in his play, had limped for a day or two, and complained of pain for a day or two longer. There were occasional night cries as before. Three weeks before being seen he began to limp and to complain of pain in his right leg and knee. The next day he could scarcely walk, but on the day following he was better, and the symptoms gradually passed off. Soon after that he had another attack of croup, and an adenoid operation was advised by an able laryngologist. One week before being seen he had such an acute attack of pain in his right leg that the child screamed when touched and the family physician noticed that the hip-joint motions were greatly limited. The adenoid operation was performed five days before he was seen, and the hip had very rapidly improved while he was recumbent and after the catharsis previous to the operation.

Examination.—The general examination by a careful internist, except for the adenoids and enlarged tonsils, had been negative. The child was rather poorly nourished and of poor color, doubtless accentuated by the recent operation. He stood evenly on both legs, with prominent abdomen, narrow, flattened chest, forward shoulders, prominent scapulae, and an attitude suggestive of congenital visceral ptosis (Fig. 1). The length of the legs was the same. The circumferences of the calves and thighs were equal on both sides. The motions of the spine and all other joints, except the right hip, were free and painless. The motions of the right hip were nearly normal, but on careful examination there was distinct restriction and slight spasm in hyperextension and rotation. No sensitiveness to jarring. Palpation was negative.

Treatment and Subsequent History.—The child was not put to bed, but the positions described in Case 1 were shown. Mechanical cathartics were advised and he was measured for a back brace with an abdominal pad to correct the standing position, support the abdomen and maintain the proper posture (Figs. 2, 3 and 4). A moderate amount of weight-bearing was allowed. A provisional diagnosis of toxemic arthritis was made. Roentgenograms taken of both hips on the same plate and of each hip singly were negative. The von Pirquet test was absolutely negative. All the subjective symptoms disappeared, and although the boy had subsequently a second adenoid operation and a tonsillectomy, there was no recurrence of leg pain until about seven weeks ago, when he complained of slight pain in the knee for a few hours, May 2 and 3. He was seen, May 4, but the examination showed normal conditions except for the faintest suggestion of limitation in hyperextension. The boy is now apparently entirely well, with good color, and has had no digestive upsets or sluggishness of the bowels.

CASE 3.—*History.*—Girl, aged 14½ months. Only child of people in good circumstances, living in New York City, and referred by a prominent and careful orthopedic surgeon. She was first seen about three months ago and the symptoms had been present for three months. The family history was negative. She had been a bottle-fed baby, great difficulty having been experienced in her early feeding. A proprietary food seeming to agree best, she had been fed on this. After a digestive upset with vomiting, the mother noticed that although she had begun to bear weight and to stamp her feet, she ceased doing so on her right leg, and weight-bearing was painful. When the right leg was raised or moved roughly the child cried. There were typical night cries as well. The family physician was summoned and the orthopedic consultant referred to above was advised by him. The general examination was said to be negative, changes in the diet were suggested in the line of more natural food, orange juice, etc., recumbency and traction were ordered, and a provisional diagnosis of tuberculosis of the right hip-joint made. Within a short time the pain and spasm and night cries having disappeared a short plaster spica was applied by the family physician. This first plaster was worn until three weeks before the child was seen by me, and then a new cast was applied. The family soon moved to the neighborhood

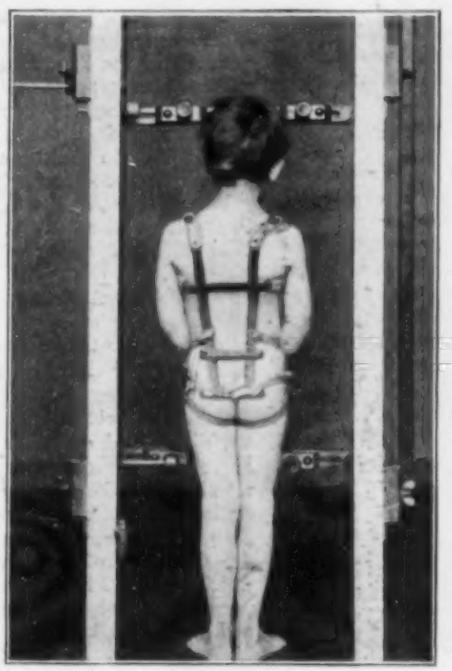

Fig. 3.—Back view of brace to correct posture, Case 2.

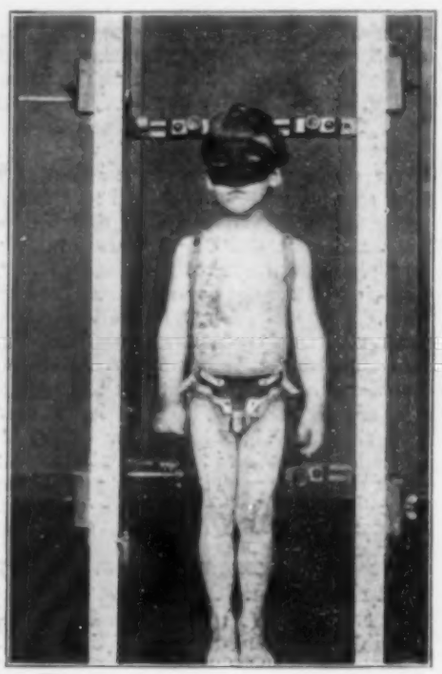

Fig. 4.—Front view of brace to correct posture, Case 2.

of Boston, and the second cast being foul with urine, etc., was removed by a local physician the day before the child was brought to me. During the one night on which she slept without the cast there was no night cry. Since the cast had been applied the digestive upsets had ceased, but the stools had often been hard.

Examination.—The general examination was negative. The baby was well nourished, healthy looking, moving both legs with apparent equal freedom and power. There was no evidence of any sensitiveness or guarding in any of the voluntary movements of the right leg. There were no signs of rickets or scorbutus. The abdomen was prominent, but not tender. As far as could be determined, the legs were the same length. The circumference of the calves of both legs were equal, the right thigh a centimeter smaller in circumference than the left, 8 cm. above the upper border of the patella. The motions of all the joints, including the spine and right hip, were free and painless. Palpation was negative. There was no pain on jarring. During the office visit the child had a movement of the bowels consisting of a hard scybalous mass quite different from the normal movements at this age. Roentgen examination was negative except for a slight thinning of the cortex on the right. The child moved slightly and the examination was not entirely satisfactory.

The final diagnosis was withheld until a von Pirquet reaction could be done, but the possibility of the condition being other than tuberculosis was discussed with the mother.

Treatment and Subsequent History.—The child was placed in recumbency, the bowels were regulated with liquid petrolatum, and the case was referred to a pediatrician for careful examination, regulation of the diet, and a von Pirquet test. No fixation or traction to the right hip was advised. The local physician was asked to make daily visits with his observation directed toward any suggestion of a recurrence of symptoms. The von Pirquet test was absolutely negative. The child was seen again one week later. There had been no noticeable subjective symptoms, although on two or three occasions the child had wakened at night and cried, but not typically as before. The right leg at rest seems to be held in a slightly abducted position. There is no suggestion of limitation of motion in any direction nor any pain on manipulation or jarring. The child has remained well up to the last report.

SUMMARY

No definite conclusions can be drawn from so small a number of cases. They seem to me to indicate the importance of (1) a careful history, (2) a search for possible causes of toxemia, (3) a von Pirquet test and perhaps tuberculin tests with Koch's old tuberculin for the local reaction if the skin test is positive, (4) a provisional diagnosis at the first visit, and (5) the withholding of radical treatment other than recumbency until the diagnosis can be confirmed. They seem to suggest that faulty posture and intestinal derangements may in certain cases have some relation to coxitis.

372 Marlborough Street.

ABSTRACT OF DISCUSSION

Dr. Joel E. Goldthwait, Boston: We must recognize that the physiologic processes of the body on which the nutrition of bones and joints depends should be brought to the highest possible standard, so that the individual may have the greatest possibility of repair. The work of Sir Arbuthnot Lane is suggestive in this connection. When a man of his experience short-circuits the bowel of all children with tuberculosis of the joints caused by general toxemia, and obtains such good results it should make us think. We may not be willing to short-circuit a bowel, when the bowel is already too short in these children, nevertheless, we may make it functionate better, and so stop the toxemia, as Dr. Osgood has suggested. If we examine children, not only with reference to local joint inflammation, but also with reference to the entire body, we shall do well. If we think first of the child as a machine, and consider the disposition of his organs through his standing so badly out of poise, we will see that the normal physiologic action cannot take place. We must build up the resistance by improving the physiologic action, intestinal and otherwise, as well as protect the joints.

Dr. Compton Riely, Baltimore, Md.: Dr. Osgood's paper brings up another question in the diagnosis of tuberculosis, especially tuberculosis of the hip. It shows, I think, that we should be more careful in making our diagnoses of hip-disease. The more of these cases I see, the more doubtful I am of their absolute diagnosis as cases of tuberculosis. We have been taught that if children had pain in the hip, limitation of motion, night cries, etc., they had tuberculosis of the hip; and we used to treat these cases as such, but we must be careful to make a more definite diagnosis in the future. In order to do that we must take time to go through every test and examination that we can think of. If we did this we should find fewer absolute cases of tuberculosis than some of us think.

Dr. Charles A. Parker, Chicago: There is at least one method by which a diagnosis in some of these cases can be reached. This is by learning the causative factor, according to the method of Dr. E. C. Rosenow of Chicago. In osteo-arthritis of the knee he took out the inguinal glands which enabled him to make the diagnosis in twenty-three cases; he found the infectious agent in the blood and teeth, and was able to reproduce the disease in animals. His method of diagnosis will probably come rapidly into vogue. The lymphatic glands are taken from the region drained.

Dr. Frederick Hodgson, Atlanta, Ga.: I confirm Dr. Osgood's observations on these conditions of the hip. Dr. Michael Hoke of Atlanta read a paper some time ago on toxic arthritis of the hip; and since then we have been careful in making these diagnoses at the first visit. We put the patients to bed with the best of hygienic surroundings, use colon lavage and get them into the best possible condition. We find that in this way many cases will clear up.

Dr. W. G. Stern, Cleveland: Reasoning backward from Dr. Osgood's observations, we come to consider the fact that the differential diagnosis of these cases from genuine cases of tuberculous coxitis can be best made by the tuberculin reaction. At the meeting of the American Orthopedic Association in Cincinnati, I reported on a combination of the von Pirquet and the Calmette tests as a reliable guide in making the diagnosis of tuberculous coxitis. I reported cases in which the von Pirquet and Calmette tests were negative in the presence of suspicious joint-pain. One was the case of my own son, who had had, within six months, four attacks of night cries with fixation of the limb in adduction and flexion, muscle spasm and slight limp. Roentgenoscopy and the tuberculin tests were negative and we found that the condition was due to a toxic absorption from the bowel from the ingestion of veal. On cleaning out the bowel and keeping the boy at rest we overcame this condition. Then we gave him some roast veal and brought on another attack. Some persons have an idiosyncrasy to certain kinds of food. In this case the idiosyncrasy was to veal. Since then I have looked for other cases and found one, a year ago, in a girl who presented very much the same posture that Dr. Osgood has shown in his cases. By methods similar to those that he has pointed out a cure has been effected.

Dr. Roland Meisenbach, Buffalo: What applies to children also applies to adults. I had one case in a woman 27 years of age who complained of coxalgia. Hyperextension of the hip-joint was limited on the right side and she also had pain over the region of the appendix, although the surgeon could not find an actual appendicitis. Bismuth oxychlorid was given her in small doses over a period of a week. The symptoms disappeared entirely and hyperextension was regained.

Dr. R. B. Osgood, Boston: Dr. Parker's suggestion is valuable, but it must be remembered that various men have recently shown that these bacteria stay in the blood a very short time indeed. In these attacks, therefore, it would be difficult to catch them in the blood at the time and confirm

the diagnosis by means of the glands; and I believe that frequently glands that are causing no trouble will show, by culture, some bacterial growth. Hence, while that suggestion is helpful in cases that we believe represent toxemia rather than definite bacterial infection of the joint, yet I do not think it is of a great deal of use in cases of definite bacterial infection. I was much struck with Dr. Stern's valuable observation of an arthritis of the hip caused by the ingestion of veal.

THE SYNDROME OF ADRENAL INSUFFICIENCY *

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To the neurologist many cases are referred with the diagnosis of neurasthenia. Many of these are psychologic, being in reality a fixed idea of incapacity derived from the suggestions of medical men or friends, or, perhaps, because of some internal mental conflict which makes the motives for invalidism paramount over those for normal active life. Such patients often actually do become weak, either from mere inaction, or from the malassimilation induced thereby and the worries they permit themselves; this is a familiar picture in a traumatic neurosis,[1] so-called. But among those labeled neurasthenics, there is a certain proportion of patients in whom hysteria is not the factor at all; I do not here refer to psychasthenic patients, in whom anxiety and other features of psychic genesis dominate the picture; nor do I include the *formes frustes* of such psychoses as cyclothymia (manic depressive insanity), hebephrenia, etc. I refer to cases in which definite somatic disturbances are ascertainable, and in which any psychologic symptoms present are dependent on these. Among such cases of "neurasthenia" are persons with latent abdominal or pelvic inflammations, *petit Brightisme*, arterial hypertension and the metabolic disorders which precede it, early stages of cerebrospinal lues, especially that called paresis, and quite often perversion of function of the glands, more especially the thyroid.

Among such cases, I have encountered several in which none of the foregoing conditions were present, but in which the patients were suffering from a profound depression of the neuromuscular functions, quite different from that which is induced mentally or from disturbances of the brain. These are characterized by great asthenia, with lack of concentration, by low blood-pressure, sometimes by psychologic peculiarities, and sometimes by changes in pigmentation. I select a few as paradigms:

Cases may be divided into three classes:

1. Those in which there was improvement or recovery.
2. Those in which there was not.
3. Those which ended fatally.

CASES WITH IMPROVEMENT OR RECOVERY

CASE 1.—*History.*—A man holding a high position under the federal government was brought to me by his friend, Dr. Gerrish of Portland, Maine, in 1911. He complained that he was totally unable to bring himself to deal with the responsibilities of managing the situations with which he had to deal, besides which he was greatly depressed mentally and believed that his usefulness was ended. He "can do work if it does not demand responsibility or the handling of men," for he "finds that his judgment one day takes a certain course only to be deflected the next day, even though the facts may be the same." He can make up his mind neither to accept a yachting invitation to Europe he has received, nor to take a professorship he has been offered for next year. He was pale, languid, had flabby muscles and subcutaneous tissues. He had typhoid at 18, and pleurisy at 20. Two years before he had a rise of temperature and a rapid and irregular heart, the cause of which was unknown. He has always taken his work responsibilities very hard. He is a bachelor of a somewhat retiring disposition, which his need for long inspection trips in the West has accentuated.

Physical Examination.—This was negative, except that there was a very slight tremor, the heart sounds were feeble, the systolic pressure was 100 and diastolic pressure 70.

Treatment and Result.—The psychologic situations were entered into with the patient very thoroughly, and it was explained that a simple physical depression from want of adrenal juice prevented the brain from accomplishing the processes necessary for the complex psychologic adaptations which had always caused stress on account of his overconscientious way of regarding his relations with others. He was told that worrying would only aggravate the distress, and that his mental incapacity did not arise from what he feared, impending dementia; it would disappear on rectification of his physical state, the nature of which was explained to him. His diet was regulated and he was ordered much rest along with active exercises in short periods. He was given dried adrenal gland tablets, 2 grains thrice daily. The following week there was an improvement, the systolic blood-pressure was 98, diastolic 70; ten days later the pressures had risen to 114 and 80, respectively, he felt better and looked fresher. The following week after sleeping much, he felt better, but still had no spring; the blood-pressures were 112 and 70, respectively. He was staying with friends, worrying less and clearing up his work preparatory to a vacation in the Maine woods. Just before leaving, two weeks later, his pressures were 113 and 80, respectively; he was now more hopeful and more comfortable in mind; the pulse rate remained 70 throughout.

In the fall of 1912 he returned very much better, the dose of adrenal substance having been reduced until finally he went without it; the blood-pressure runs around 118 and 80, and although he has never completely regained his spring and ambition, he is much better, "feels fit," and has undertaken all the work for the government which he had planned.

CASE 2.—A mechanic, aged 57, was referred in February, 1912, by Dr. Jackson; he had done no work after an attack of malaria the preceding September, because he had been very weak and dizzy and had a throbbing in the abdomen. Examination showed a tremor a little like that seen in paralysis agitans, but occurring only on spreading the hands, and a slight tremor of the hands and face; there was slight asthenia, and a hint of von Graefe's sign, especially when he was made to look down rapidly. The blood-pressure was systolic, 108; diastolic, 78; no other abnormalities were found. He was returned to his physician with a reserved prognosis, and a recommendation for massage, a proper standard dietary, and adrenal substance. These measures improved him so much that he returned to work and has been well ever since. His physician says that he has never seen such a transformation.

CASE 3.—*History.*—A professo of economics, aged 44, was referred to me by Dr. Newell in March, 1913, because of headaches for six years, especially when tired after using the eyes. Twenty-one oculists had failed to relieve him in this country and in Europe. An internist had found nothing the matter with him. He complains also that at times his whole body is sore, especially the neck, and he often awakes with a pain over the sacrum, dull and heavy, radiating and intermittent, which may be removed for a time by a bath; there

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in THE JOURNAL.

1. Williams, Tom A.: Idea and Emotion in Traumatic Neurosis, Jour. Abnormal Psychology, 1910; Psychic Effects of Accidents, Tr. Southern Soc. Ry. Surg., and Monthly Cyclopedia, 1912, v, 47; v, 650, 722.

is no neuralgia and he sleeps well. It is significant that though he says he cannot work because of the eyes, he easily tires also when read to. He was much worse since grip a month before.

The patient had scarlet fever when a sophomore, without kidney disease, followed by insomnia, which recovered while he was a school superintendent in the country. He has no cause for worry, his hygiene is excellent, he formerly exercised much, but now does not feel like it, and loafs a great deal; he lacks sexual desire.

Examination.—This reveals a tired voice, exaggerated reflexes, great tenderness to pressure, and atrophic state of skin and hair, which he says is a family character. Blood-pressure is 114 and 78; there are no morbid psychologic phenomena.

Treatment and Result.—He was ordered massage, active exercise in wood chopping, and adrenal substance, 4 grains twice daily. In a fortnight adrenal was reduced to 2 grains. The only change was the disappearance of hyperesthesia, which I attributed to the massage. After a month, the voice was less tired, thinking and talking were easier, the muscles were stronger. However, headaches were still easily provoked, and asthenopia was still marked; blood-pressure was practically the same. The dose of adrenal was increased to 4 grains again. After this, there was a general improvement, but the patient found that if he extended his work beyond four hours a day he was totally unfit the following day; he was, however, doing a great deal of work in spite of this, even to completing a valuable work on the tariff in time for an insistent publisher. In this respect, he reminds one of Herbert Spencer, who had to limit his work to about four hours a day.

Case 4.—*History.*—A woman, aged 38, was referred in February, 1914, by Dr. Cooper of Hinton, W. Va., because of a postpuerperal psychosis, which greatly accentuated spells of melancholy which she had had for some years. The analysis of these showed that she felt the burden of child-bearing, which she wished to cease; but her husband was a hard man, of rigid views. She was well-developed and nourished, but food had no taste and she had lost interest in life. Blood-pressure was 112 and 84, and there was brown pigmentation of the linea alba, palate and forehead. She was placed at rest in a hospital and massaged and given adrenal substance in a dose of 2 grains twice daily. In a week, blood-pressure had fallen to 106 and 86, and the following day to 90 and 64, respectively. Practically no rise occurred for ten days. Then the dose of adrenal substance was doubled, whereupon there was an immediate rise of blood-pressure until it reached 118 and 94, where it steadily remained for a week even after she left hospital. After this, she went home; and I am informed that she remains well, while the dose of adrenal substance was reduced. She was very difficult to manage, as she desired to leave the hospital and return to her husband, and was obstinately resistant to all reason to the opposite; this idea persisted even after her recovery.

Case 5.—*History.*—A single man of 40 was referred to me by Dr. Bowen, in November, 1912. He was engaged for six months and was obsessed by a feeling that he was disqualified because of impotence. "Worrying about this had run him down so much that he lost his self-control," although he was no longer worried about that; the prospect of marriage in three weeks so horrified him that he no longer wanted to work; he wanted to go and hide; he had the belief that he "was down and out," and that he would lose his job as well. Telling his fiancée had not relieved him in the least, although she was most sympathetic. He had recovered from nervous indigestion some years ago until these troubles came. He had taken many drugs, including chloral hydrate. He was quickly fatigued after a short walk. His physician advised him to marry and go to Atlantic City, but he could not face it, being so "autosuggestible" as he put it; all he could do was to hang around his boarding house, where his fiancée lived.

Examination.—This showed exaggerated reflexes, small pupils, sunken eyes, very large, soft, weak pulse without cardiac dilatation, pigmented abdomen, and blood-pressure 102 and 80. Psychic examination was gone into most thoroughly, but it showed no important features, there being no night terrors, and the dreams, whether pleasant or unpleasant, not having pathologic significance. He was prescribed adrenal gland and wet packs to induce sleep. Three days later, the packs not having been taken, the blood-pressure was 100 and 80. The cooperation of his fiancée was enlisted, and his physician reports to me that he fully recovered and married; but I have not ascertained his present blood-pressure.

CASES WITHOUT IMPROVEMENT

Case 6.—*History.*—An ethnologist, aged 30, was referred by Dr. Henning, in February, 1914, because, as he put it, "his mind feels as a shadow only, and for two years most of the time nothing seemed real." The condition had begun suddenly two years ago, from what was believed autotoxication. He first noted it while doing professorial work at Columbia University when he could not clearly focus his thoughts, and was very much alarmed at it. As a matter of fact, he was a good deal concerned about his physical health for some years, having intestinal flatulence especially after worrying, which he did much; now and then he would have a foul tongue, severe indigestion and dizziness, and headaches in the morning, and he had attributed his condition to disordered metabolism. A love affair aggravated his condition; but this was duly settled by his marriage, which, however, did not improve his health.

He consulted a New York neurologist, who laughed at him and said his nerves were disordered, and ordered a vacation, which he took without benefit. He had a weak, heavy feeling, especially in the arms, and sudden insomnia without cause. During field work among the Indians in Oregon he began to feel better for a while, but finally became so ill that he went into a sanatorium, where a diagnosis was made of a psychoneurasthenic. There he gained 20 pounds, and felt practically well for a few weeks. Returning East in the train, he caught cold, and lost 8 pounds in ten days. Since then, three months before, he has felt out of sorts a great part of the time.

Examination.—The reflexes were slightly exaggerated, the frontalis reflex very markedly (this is obtained by tapping over the zygomatic ridge just in front of the antitragus, when a sharp twitch of the eyebrow occurs). The tongue was flabby and white, except just at the tip. The blood-pressure was 102 and 78; the patient was very swarthy, as he said he had always been. Moderate smoking and some constipation were the only other features noteworthy.

Treatment and Result.—The patient was given a standard dietary, massage and adrenal substance, 2 grains per day. In ten days the blood-pressure had become 108 and 86; he was irritable, had sinking spells in the chest, felt presentiments, started in his sleep at times, his eyes ached, and his feet become cold.—He was sent to bed. Two weeks later, after being up two days, the blood-pressure was 90 and 68, and he felt very tired; his mind was not clear and there was pigmentation of the palate. The dose of adrenal substance was doubled; he was given one tablet of thyroid substance daily in addition. Three days later, the pressure was 104 and 78, and he was found to have increased 5 pounds in weight. Wood chopping was prescribed, and later on the blood-pressure was 117 and 88; but he felt bad. Four days later the blood-pressure was taken by Dr. Lemon, whom I had asked to cooperate in his care, when it was reported to be 112. The next day, after a sleepless night and a day of work, it was 98 and 68, and he had lost 2 pounds. I found he had taken no adrenal substance for five days because he had vomited after taking a decomposed portion. Eight days later the blood-pressure, taken by Dr. Lemon, was 100; three weeks later, 110; the next day, 110 and 78. The patient had been at work typewriting some notes, for he could do no thinking. A week later, blood-pressure was 100 and 82, and the pulse was very weak; he was prescribed 14 grains of adrenal substance per day. He thought it made him feel ill and gave it up; four days after, the blood-pressure, taken by Dr. Lemon, was 110. A week later, blood-pressure was 100 and 65, respectively, since when it has varied between this and 110. Meanwhile a blood examination was made by Dr. John Nichols, which was as follows: Red corpuscles,

5,900,000 per cubic millimeter; hemoglobin, 85 per cent.; corpuscular hemoglobin ratio, 0.72; leukocytes, 13,300 per cubic millimeter; proportion of white to red corpuscles, 1:440; small lymphocytes, 33.3 per cent.; large lymphocytes and large mononuclears, 8.3 per cent.; polymorphonuclears, 43.7 per cent.; esoinophils, 13.7 per cent.; mast cells, 1 per cent. The large proportion of eosinophils caused us to look for intestinal parasites. The examination of the feces was negative, and we are at a loss to account for this phenomenon.

The only result of the treatment is that the patient is now worrying a good deal less, and I am in hopes that he will learn to content himself with a good deal less output of work, that his functional inadequacy will not increase, and that a slight improvement may occur from the large dose of adrenal substance that we are now giving.

CASES ENDING FATALLY

CASE 7.—*History.*—The 17-year-old daughter of a Boston physician, a brilliant girl, began to tire easily both in study and in play. She was recommended a long rest; so her father took her a trip to Europe, during which, however, she became more and more unable to respond to the interests of the visit; finally she was brought to visit an old friend in England at a private institution where I was making some psychologic studies; there I was asked to see her in consultation with the superintendent. By this time the asthenia was extreme, the pupils were dilated, and the bronzing of the skin most decided, so that the diagnosis of extreme hypo-adrenalism was manifest. The psychologic history was imperfect, as we were exceedingly anxious to improve the condition we found. Adrenal substance was given, both in the mouth and under the skin; but there was no response, and within a week the little girl died. Of the blood-pressure, I have no note; I do not think there was an instrument at that time, 1907, in the institution. The adrenals were taken out post mortem, and were found almost free of gland substance, nothing but some medulla and the capsule being left. A careful histologic examination showed no sign of inflammation, and we had to conclude that we were dealing with either a simple dystrophy or an autolysis of toxic origin.

DR. SCOTT'S REPORT

"Paraffin sections from two pieces were cut, and stained originally with eosin and Ehrlich's acid hematoxylin, more recently by hematoxylin and Biebrich scarlet method (Scott, 1912).

"Microscopically, the capsule is relatively thick, and surrounds a central region infiltrated with lymphocytes, and in some parts engorged with blood. Among the lymphocytes are large cells of irregular shape, with basophil cytoplasm and nuclei of variable size. These cells are frequently arranged in strands. In some places are a few cells whose cytoplasm is somewhat oxyphil (really amphophil with oxyphil preponderance), and whose nuclei are on the average smaller than those of the basophil cells. In some of the more recent sections an accessory cortex whose cells are like those of the second group is visible, lying in the capsule.

"Originally, before I had seen the accessory cortex, and being also more ignorant than I should have been, I was unable to determine the origin of the cells described above. At the present time it is quite clear that the first group is medullary and the second cortical, for by my method the cytoplasm in the medullary cells is predominantly basophil, and in the cortical cells predominantly oxyphil. Everywhere some of the cells have a degenerate appearance, even in the accessory cortex. To sum up, the cortex is practically all gone, but the medulla is much less destroyed.

"The process appears to be centripetal degeneration of the suprarenal cells, accompanied by lymphocytosis and patchy engorgement with blood. Unless pure lymphocytosis be inflammatory there are no signs of inflammation. Certainly there was no fibrosis going on at the time of death, in spite of the thick appearance of the capsule. This relatively thick capsule must be the original capsule and the scanty connective tissue of the cortex collapsed together after disappearance of the cortical cells; for if new formation of white fibrous tissue were going on, young fibroblasts would be present, and their cytoplasm would be obvious, being basophil. As it is, the connective tissue cells have unstained cytoplasm. I should like to emphasize this characteristic of fixed connective-tissue cells, namely, that when they are young, as in the fetus, granulation tissue and spindle-celled sarcomata, their cytoplasm is basophil enough to stain with Ehrlich's acid hematoxylin; but when they are mature they appear as naked nuclei, the cytoplasm being no longer sufficiently basophil to stain as before, nor sufficiently oxyphil to take up the acid dye."

CASE 8.—*History.*—A married woman of 34, formerly a schoolteacher, was referred to me by Dr. Wilson on account of a nervous breakdown thought to be the result of twelve years of overwork, during which her weight had fallen from 114 to 97 pounds. She had been worse since her marriage three years before; she had not benefited from residence in a sanatorium or a removal of a uterine polypus. She had been anemic, and although she ate well she did not seem nourished. The heart was feeble. She was a woman of extraordinary good sense and did not worry; she had suffered all her life from inherited menstrual headaches which had prevented her rest; she used to have numbness in the leg; now even massage tires her.

Examination.—This showed feebleness of the reflexes, the abdominal and plantar being hardly perceptible; dilatation of the stomach, râles in the chest, pale mucous membrane, sunken eyes, and with it all a calm psyche. Weight was only 83 pounds; there was earthy brown pigmentation on the face, linea alba, a splotch below the xyphoid, and a faint discoloration on the arms and legs, while the coccyx and buttocks were very dark. Hemoglobin was 80 per cent., red cells 4¼ million, leukocytes 3,000; the systolic blood-pressure was 86 or less and the diastolic 66; it was difficult to measure. A week later, the pressure was 80 and 64, the reflexes needed reinforcement and her weight was 81 pounds. She went into the care of Dr. Marbury, and some weeks later she died. Necropsy was refused. It is impossible, therefore, to say whether the failure of adrenal secretion which caused her death was due to tuberculosis, as is often the case, or was a simple atrophy, as in the preceding case.

DIAGNOSIS, DIFFERENTIAL AND PSYCHIC

From conditions of physical causation characterized by great fatigability and feeble circulation the diagnosis would of course be made by the current procedures of clinical medicine, on which I need not enlarge here.

PSYCHASTHENIA

But the diagnosis from certain neurotic states requires specification. Patients of the type I have described are often labeled psychasthenics because of their feeling of inadequacy, the most prominent feature in psychasthenia. But the genesis of this feeling in hypo-adrenalism is a real physical tire occurring only during exertion, while the genesis of the inadequate feeling in psychasthenia is from a besetment or apprehension; and it always passes off while the patient is actively exerting himself with muscles or mind. If there is any feeling of panic because of the dread of his incapacity in a hypo-adrenal patient, this is a purely secondary and normal reaction to physical fact; and it is very easily dealt with by enlightenment, as my cases illustrate. Furthermore, psychasthenics present a vast series of intellectual, emotional and often motorial symptoms, the combination of which is characteristic, and the source of which can be detected by analysis of the psyche.

HYSTERIA, NOSOPHOBIA AND HYPOCHONDRIASIS

The seeming exhaustion and asthenia so often found as a result of a patient's belief in the malfunctioning of a stomach, heart, intestine, limb or brain is a phenomenon of mental attitude induced in the same

way as is the case in the little child who suddenly becomes tired when his work or play is no longer to his liking. It is merely a lack of the toughening of psychologic fibers necessary to social welfare. It is a phenomenon induced by suggestion, and its name is hysteria. The real physical exhaustions which may occur after long continuance of hysteric attitudes like this are secondary to the depressing emotions sometimes induced in the patient's mind.[2]

From *melancholia* the incapacity of hypo-adrenalism is distinguished by the absence of the retardation of thought and movement always present in the true melancholic, in whom, furthermore, the responsiveness increases in speed and effectiveness as the day goes on and when the stimuli are augmented and longer continued, whereas in hypo-adrenalism the patient is at his best early in the day and the more work he does the worse he becomes.

Concerning *neurasthenia*, it should be evident that I have ceased to recognize any such nosologic rubric, regarding the term merely as a convenient cloak for failure to investigate a case sufficiently, and placing all the patients who were thus formerly diagnosed in categories corresponding to the etiologic factor which has determined their condition.

PATHOGENESIS

That prolonged hyperfunction may play a part in the etiology of hypo-adrenalism may be inferred from the facts furnished by posthyperthyroid myxedema (Wilson) and posthyperpituitary adiposity (Cushing and others). That hyperfunction of the adrenals may be induced psychologically is certain from the experiment of Cannon, which shows that the adrenal vein after fright contains a greatly increased amount of the secretion of the gland. The work of Crile too tends toward the belief that the form of prolonged fright known as anxiety may produce the same oversecretion as it undoubtedly does in the case of the thyroid gland.

Now both fright and anxiety are psychologic in induction; they are derived from ideas, an attitude of mind, which may be maintained from within by cogitation by animals with memory long after the disappearance of their initial cause. So that the conditions for the maintenance of that which makes for adrenal hyperfunction are ready in human beings to be called into action at all times, in those persons whose early training has increased fears and scruples about conduct and life.[3] It is only by proper, which means profound, analysis of the features which lead the clinician to penetrate to the foundations of human feelings and behavior that these patients can be understood, and the responses of their organism can be thereby "reconditioned" into health-bringing reactions. The way of doing so, true psychotherapy, is only an elaboration of the method employed by Pawlow to condition the vegetative reflexes of dogs.[4]

CONCLUSION

The cases reported, and the considerations involved, are far from completely presented, and I am well aware of this; but a consulting neurologist without the hospital facilities for research on a large scale is not well fitted to elaborate what is a very complex problem, namely, pathogenesis, complete clinical syndrome, and treatment of hypo-adrenalism. Although it would seem that prolonged psychic strain plays a part in the induction of the condition, yet on the one hand, thousands of individuals undergo long psychic strain and retain their adrenal sufficiency; indeed, perhaps, functionate excessively in that respect, while on the other hand, it is hardly credible that the adrenal inadequacy from which the Boston physician's daughter died was due to any excessive strain. We are reduced, then, to the hypothesis of the general inadequacy of the chromaffin system to explain cases of this kind. It may, indeed, be that inherent inadequacy is responsible for the failure of the adrenals in all cases in which there is no inflammatory or toxic process damaging the glands. I commend the problem to the resources of some large clinic. My paper is presented mainly in the hope of again drawing attention to the need of differentiation, even in a group of cases most typically neurasthenic.

PATHOLOGY

According to Scott,[5] Addison's disease must be due to loss of cortex, for accessory cortical tissue is a variable quality; but with so much other chromaffin tissue in the body, loss of the medulla should not be particularly harmful. On searching through the literature it appears that several similar cases are on record, details of which will be found in the works of Simmonds,[6] Karakascheff[7] and Bittorf.[8] Of these, some have the medulla intact, but the cortex gone, others have more or less cortex and medulla left, and yet others are merely fibrotic. Karakascheff,[7] working in Marchand's institute on specimens very similar, was, I believe, the first to prove destruction of the cortex to be responsible for Addison's disease. That the medulla is not essential to life is seen from his case of a child, 5 to 6 months old, in which the cortex was intact, but the medulla had been destroyed on both sides by hemorrhages, but so long before death that calcification had taken place. During the patient's stay in the hospital no symptoms were observed which were referable to the suprarenals. To show the importance of the cortex, he also brings forward a case in which, after death from other causes, one suprarenal was found to have been destroyed by tuberculosis some time previously and the other was hypertrophied, but in the cortex only, thus corresponding with the results obtained by previous workers after removing one suprarenal in young rabbits and guinea-pigs. Wiesel[9] studied ordinary tuberculous cases of Addison's disease, and found that the chromaffin tissue outside the suprarenals was also diminished in amount. He came to the conclusion that Addison's disease was due to deficiency of the whole chromaffin system; but it is hard to understand why tuberculous destruction of suprarenal medulla should be accompanied by simple disappearance of other chromaffin tissue, rather than by compensatory hypertrophy. His cases also all showed more or less destruction of cortex. In a second paper, Karakascheff (1906) is unable to confirm Wiesel's

2. Williams, Tom A.: Hysteria and Pseudo-Hysteria, Am. Jour. Med. Sc., September, 1910.
3. Williams, Tom A.: Management of Juvenile Psychasthenia (Section of Children's Diseases, Wash. Med. An.. 's, 1913, xii, 31); Am. Jour. Med. Sc., January, 1912; Arch. Pediat., 1912; Pacific Med. Jour., 1910, liii, 84; also in Psychotherapeutics, Badger, Boston, 1909.
4. Williams, Tom A.: False and True Mental Healing, Tr. Brit. Med. Assn., and Br. Med. Jour., 1913; The Practical Import of Recent Work on Hysteria, THE JOURNAL A. M. A., Dec. 21, 1912.
5. Scott: Proc. Path. Soc. Great Britain and Ireland, 1914, xviii, 419.
6. Simmonds: Virchows Arch. f. path. Anat., 1903, clxxii, 480.
7. Karakascheff: Beitr. z. path Anat. u. z. allg. Path., 1904, xxxvi, 401; 1906, xxxix, 373.
8. Bittorf: Die Pathologie der Nebennieren und der Morbus Addisonii, Jena, G. Fischer, 1908.
9. Wiesel: Ztschr. f. Heilk., Part 1, Path. Anat., 1903, xxiv, 257.

observations on general loss of chromaffin tissue, and deals with the well-known finding of destruction of suprarenals without Addison's disease. This he ascribes to the presence of a sufficient amount of accessory cortical tissue, and he further gives a detailed description of two such cases.

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ABSTRACT OF DISCUSSION

DR. FRANK R. STARKEY, Philadelphia: In dealing with conditions in which the organs of internal secretion are involved, we must remember three things; first there is no such thing as a syndrome of adrenal insufficiency or of thyroid or pituitary insufficiency. This condition is always polyglandular or multiglandular. Although any of the organs of internal secretion may be most conspicuously involved, including the sexual organs, whether the condition be one of lowered function or excessive activity, the condition is always multiple. When one of the group is not functioning properly, the equilibrium of the entire chain is disturbed and the delicate balance normally existing between them is destroyed. Adynamia, inefficiency, mental and physical asthenia and melancholia are the keynote of this condition no matter what name we give the syndrome. Secondly, because of the multiple nature of the condition we must treat the entire group. Thirdly, it is a mistake to administer extracts or other products obtained from spayed animals. The glandular products of commerce are all derived from animals which have been raised for food purposes and they have been castrated in their early youth to improve their flesh for food purposes and they are neurasthenic and inefficient themselves. I do not know just why the medical profession has not recognized this before, for the difference in the texture and flavor of the flesh as well as in the temperament of these animals is so well known. The change from the bull to the ox or from the cock to the capon are conspicuous and familiar examples. The change that takes place in their organs of internal secretion is just as marked, so that the chemical composition and the physiologic action of glands obtained from spayed animals is very different from that of those derived from unspayed ones. In melasma or exophthalmic goiter, it is good organotherapy to treat all of the glands of internal secretion. We must bear these points in mind if we are to be successful in organotherapy.

DR. WALTER L. BIERRING, Des Moines, Ia.: I will refer to a case of melasma, the patient being the wife of an Iowa physician. She is 37 years old, and the mother of two healthy children. The condition has been observed about two years, and at present the pigmentation and hypotension are marked. The systolic pressure is 70 and the diastolic 45 mm. Hg. She is fully conscious of her condition, and therefore observant of symptoms and the effect of different plans of treatment. She feels that she is entirely sustained, and in fact her comfort depends on the taking of adrenal extract in doses of 3 grains three times a day. When in a state of extreme weakness, with an absent radial pulse, a single dose will bring back a palpable pulse, raise the blood-pressure appreciably, and increase her general strength. I agree with Dr. Starkey's remarks with regard to adrenal insufficiency as but a single factor in promoting the condition usually referred to as Addison's disease (melasma), because as in the case referred to, while life is sustained and an improvement of symptoms takes place under the substitution therapy, a cure of the condition by this means alone is not to be accomplished.

DR. TOM A. WILLIAMS, Washington, D. C.: I wish to thank Dr. Starkey for his hint concerning the extracts from nonspayed animals; but I cannot agree with the generalization that all endocrinian disorders are pluriglandular, although I have had many such mixed cases. The cases reported in my paper were specifically chosen because they seemed to represent the syndrome of adrenal insufficiency in its purity. Furthermore, in the cases which did not improve, mixed-gland therapy was ineffective; but I cannot say why the extra large dosage should prove conspicuously effective in one case while failing to assist others. I have brought the subject before this Section rather than that of neurology, in order that others may be encouraged to make more extensive and thorough observations than are possible for a neurologist without a large hospital service.

PAPILLOMA OF THE LARYNX *

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ETIOLOGY AND HISTOLOGY

Many papillomas spring from an inflammatory, syphilitic, tuberculous or even a malignant base, and histologically the malignant are but an exaggerated and continued form of the benign papilloma. A beginning hyperplasia on the vocal cord, irrespective of its underlying cause, may in due course of time assume proportions, varying from a small papular mound to a mass of epithelial growth filling the entire larynx. The proliferation in all cases is chiefly that of the epithelium, although there will be found fibrous thickenings occupying largely the posterior laryngeal wall and the posterior half of the vocal cords, which are seen quite frequently in habitual consumers of alcoholic beverages, also in newsboys, peddlers, hawkers and in those suffering from chronic or atrophic rhinitis. In singers, particularly those with soprano or tenor voices, these thickenings of the epithelium occur on the anterior third of the cord, and are the result possibly of muscle strain. From these hyperplasias spring pointed projections, which form the so-called papilloma. The surface may be papillary or may be smooth with but slight irregularities. The color may vary from a pale, dead white to a red or rose color; sometimes they are dark gray, at others the same color as the cord. Often they are mistaken for singers' nodules, particularly when located at the anterior third of the cord on its border; they may be single, broad-based, multiple or pedunculated with slender bases and vibrate with the respiratory current. They occur frequently in children as a mass filling the larynx, crowding one on the other, some with broad bases and others with pedunculated bases. The simple flat papilloma has but few branching projections, usually very white, with a surface cornification such as is seen in the hard, dry wart on the hand.

This type is observed in elderly men and should be regarded with suspicion, particularly if there is increased vascularity at the base. Often the microscope will reveal no indication of malignancy, as the bits of epithelium removed from the surface of the growth give no evidence of the character of the substratum; but later examination will define the malignant character of the underlying structure.

The frequency of papilloma as compared to other benign growths varies from 39 to 50 per cent. of all cases of benign laryngeal growths. When appearing singly, their most frequent locality is in the anterior half, while the multiple variety will be found most frequently in the posterior part of the larynx, but may also extend to the rest of the mucosa. In children, papilloma is the most frequent laryngeal growth and has been known to be congenital. Here they appear in the branching or budding form and may spring from

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the entire laryngeal mucosa. In the greater number of instances they reappear persistently when removed until such physiologic change takes place in the child as will occasion their permanent disappearance.

SYMPTOMS

A small papilloma may exist on the vocal cord of an adult for a long time without attracting the attention of the individual or his associates, either by local discomfort or alteration in voice. In fact, singers have been able to continue their professional work with a moderate-sized papilloma on the cord, without noticeable alteration, except perchance a failure to produce properly one particular note in the limits of their vocal register. In the majority of instances, however, the most noticeable symptom of the existence of papilloma of the larynx is a husky voice or some deviation from the normal. Hoarseness, with now and then a falsetto note, or the reduction of the voice to a subdued whisper is most marked in the adult. The single papilloma when situated on the anterior third of the cord will produce considerably more vocal disturbance than when situated elsewhere. In the multiple variety, particularly in children, the voice is often reduced to a low, hoarse whisper and the cry of the infant, when multiple papillomas are present, resembles that squeaky sound often noted in cases of croup or acute edema of the larynx. The child is often dyspneic and under exercise may become cyanotic. During excitement the facial expression assumes a peculiar aspect denoting insufficient respiration. The same condition is often seen in children in whom large lymphoid masses exist both at the base of the tongue and in the nasopharynx, but when hoarseness has been a prevalent symptom in the child over a continued period, although tonsils and adenoids are sufficiently hypertrophied to warrant the supposition that they are responsible for the hoarseness, it is nevertheless advisable to bear in mind the possible existence of papilloma. In children the long continued presence of papilloma causes irritability, impairs digestion, narrows the chest by insufficient respiration and incidentally reduces the vitality owing to improper oxygenation of the blood. They become pale, anemic and emaciated, although exceptions to this rule are often seen, when the child is fat, thick-necked and of good color.

FREQUENCY

Judging from the reports formerly submitted by Fauvel and others, we can reasonably conclude that in the early history of laryngology more of these neoplasms existed than at present. The reason for this lessening in frequency may be attributed, according to Wright, to two cause:

> First, the number of trifling laryngeal complaints which come under the observation of the laryngologist to-day has enormously increased; second, to-day treatment in these cases, but especially early and judicial treatment of nasal and pharyngeal diseases has greatly cut down the liability to inflammatory benign laryngeal neoplasms.

Their occurrence in children is comparatively rare. Clark found only twelve cases in the examination of 12,623 children under 14 years of age at the Massachusetts General Hospital. Over a period of fifteen years there have come under my care and treatment at the Manhattan Eye, Ear and Throat Hospital only eight patients, and I have had occasion to observe in the clinics of my confréres only a few additional ones. In 300 tumors of the larynx reported by Fauvel, 206 were papillomas, and of this number nine were in children under the age of 15 years. In the reports of 302 cases of combined papilloma and fibroma of the larynx, 209 occurred in men and 93 in women, thus showing a preponderating tendency of this growth in men.

TREATMENT

Laryngofissure was at one time believed to be effective in the removal of these growths and in the prevention of their recurrence, but the experience of many operators has demonstrated that this is not only ineffective in the majority of instances, but permanently injures the voice, so that it is now deemed an absolutely unjustifiable procedure. Abbey reports a case in which thyrotomy was performed four times, with recurrence of the growth after each operation, although the bases of the tumors were cauterized; tracheotomy had finally to be done ere the condition was overcome. Lindon reports a case in which thyrotomy was performed seventeen times; but the case finally resulted in laryngeal stenosis, necessitating permanent use of the tracheal tube. In adults, removal of the growth either by indirect or direct laryngoscopy offers fair hope of its eradication, although in many instances recurrence takes place even though the base is cauterized. In the multiple variety in children, surgical removal by direct methods not only results in recurrence of the growth at the site of operation, but likewise occasions new growths to spring up on adjacent mucosa, even on the epiglottis, aryepiglottic folds and trachea. Occasionally in children the growths may be removed by the direct method and the bases fulgurated, and the operator be able to keep ahead of the recurrence of the growths until such physiologic change takes place as will result in their permanent disappearance. In this way the necessity for a tracheotomy-tube may be obviated. Fulguration will result in the disappearance temporarily of the growth, and the recurrence is postponed longer than when operative measures alone are employed; but fulguration has been disappointing as a permanent and positive relief for these growths in children. About the time of puberty or in adults the tendency to recurrence is markedly less, and removal either by fulguration or instrumentation presents more favorable prognosis as regards recurrence. To apply the fulgurating spark with sufficient intensity to be effective it is necessary to have the cauterizing point well insulated to prevent short-circuiting with the metal laryngeal spatula. It is also necessary to have the larynx as free from secretions as possible, as the wet mucous surface tends to disseminate the spark so that its concentration on the growth itself is ineffective. It is also necessary to bear in mind that ether and chloroform fumes are highly inflammable and the child should be permitted to breathe for a half minute at least after the anesthesia is removed ere the fulgurating spark is applied.

In some of my cases I have been able to apply the fulgurating spark with cocain anesthesia alone and I believe this to be the better method if the child is at all tractable. The fulgurating tip should be placed directly on the wart before the spark is turned on and also the current shut off before the point is removed; otherwise the current will be transmitted to the metallic speculum. When a proper spark has been obtained in the larynx the transmission of light may be seen

externally, and a good illumination is observable simulating that of transillumination of the sinuses. Unless fulguration is excessive no edema or other untoward symptoms result, and the larynx may be entirely cleared of its neoplasms at one sitting, provided the secretions and the tractability of the child permit its continuance. In one or two instances, however, I have seen considerable edema follow fulguration. In one case (Case 3), particularly, the larynx began to swell almost immediately after the application of the spark, but in this instance my associate, Dr. MacPherson, desired to be very thorough as the parents wished to remove the child to another city, and we hoped to get rid of the growths entirely by the one application. The edema following the fulguration was so threatening that it was deemed advisable to do a tracheotomy. In the other cases, however, there were no indications of dyspnea, cyanosis or any evidence of pain on the part of the patients. The best surgical method for these cases and the one method which is most invaluable in meeting the requirements of multiple papilloma in children is tracheotomy. This was recommended years ago by Hunter Mackenzie, and with the exception of a few cases has proved a most efficient therapeutic measure.

Tracheotomy, *per se,* is virtually without danger, particularly if all surgical precautions are employed and the child is placed under a croup tent for a few days subsequent to the operation. It is necessary for the child to wear this tube for a period varying from six months to two years, depending largely on the age of the patient and the time necessary for the physiologic change to take place, which eventuates in the disappearance of the growths. I have seen one case in which marked fibrosis resulted from the frequent removal of a single papilloma in the anterior commissure of the larynx, and from the anterior border of this fibrosis a large single papilloma projected out between the vocal cords. This case had been under observation for a long period of years, but both fibrosis and papilloma disappeared between one visit to the clinic and the next, a period of about two weeks. It demonstrated beyond question the conclusions advanced by Dr. Jonathan Wright a few years previously, based on observations of the same case, that a physiologic change would at some time occur when this growth would disappear. In accordance with his prognosis, not only the papilloma but the fibrosis disappeared within a period of a month, so that the voice became almost normal.

RADIUM

Radium has been applied in a number of instances, and in some cases marvelous results have been obtained. Abbey reports a case in which the application of 100 mg. of radium kept in position for one-half hour resulted in the rapid disappearance of the growth. Similar experiences have been related by Harris and Culbert. In my experience, however, there is one case presenting sufficient interest to warrant a detailed account, not yielding to radium.

CASE 1.—A. V., aged 15, had from birth a husky voice, leading to the supposition that there were congenital growths in the larynx. When about 5 years of age he was operated on by Dr. Culbert for multiple laryngeal papilloma associated with the characteristic symptoms. Laryngofissure was performed at that time and the entire contents of the larynx cleaned out and the mucosa was cauterized. Within two weeks there was noticeable improvement, which improvement lasted for about six years. At the end of that time there began a recurrence of the symptoms such as hoarseness, dyspnea and imperfect voice production. As this continued to increase he came to my clinic at the Manhattan Eye, Ear and Throat Hospital, Sept. 19, 1911, at which time there could be seen a number of warts on both sides of the larynx, both anteriorly and posteriorly. The voice was very imperfect and of a hoarse, whispering character. The evidence of the former laryngofissure was observable and the movement of the larynx was somewhat imperfect. A tracheotomy was performed and the tube worn for the space of nearly a year. The growths were removed under cocain anesthesia by the direct method, it being reasonable to suppose that surgical removal at this stage, when the patient was approaching puberty, might result in a permanent eradication. They recurred with regular frequency. It was later determined, April 23, 1912, that fulguration should be tried without surgical interference. The growths disappeared following the fulguration and the necessity for another seance did not occur for a period of three months, when they were again removed in the same manner. They recurred again at the end of two months, when the third application was made. This time they recurred at the end of a month. After each fulguration, however, a less number of growths returned and the right side of the larynx cleared up almost entirely. The persistent fibrosis together with a large sessile papilloma remained on the left vocal cord and ventricular band. The obstruction to laryngeal respiration, however, was so slight that the tracheotomy-tube was removed in October, 1912, since which time local treatment and rest together with partial removal of the growth, whenever it encroached on the larynx, has followed. This procedure was carried out in the belief that the boy was approaching that physiologic change incident to puberty which would result in a permanent disappearance.

Radium Treatment.—As this did not take place it was decided in March to employ radium. Through the kindness of Dr. Wolf Freudenthal a tube of radium was placed in the larynx after cocainization, March 19, 1914, and left in for about three-quarters of an hour. There appeared to be a disappearance of some of the thickening around the growth.

March 26, it was again applied for a period of about one-half hour following which there seemed to be a marked reaction. The voice has improved under the application of the radium, but the growth continues to recur. There have been three additional applications of radium, varying from fifteen minutes to three-quarters of an hour, but so far as clinical observation goes there has been no diminution in the size of the growth. The boy is in good health, speaks with a hoarse voice, and while the radium has apparently had little or no effect on it, my belief still holds that physiologic change will ultimately bring about that which therapeutic measures have failed to accomplish.

Delavan suggested years ago the employment of alcohol locally applied for the cure of papilloma of the larynx, and in many instances it has proved effective. I have applied it in a number of cases of papilloma of the larynx in children without any apparent effect, but here their multiplicity and the large area of mucosal involvement naturally lessen its effectiveness. In adults, the conditions are entirely different and the shrinking and drying properties of alcohol tend to bleach and dry the superficial epithelial surface so that it might disappear by autoclysis as the tonsil does with increasing age.

Shurly has recommended the employment of *Thuja occidentalis* locally and internally. This also failed in my cases of multiple papilloma of the larynx in children. Castor oil, sodium salicylate, zinc chlorid, silver nitrate, iodin and various other therapeutic agents I have tried persistently, but without any apparent effect. In my first series of cases, reported some years ago, the last case of the series had been persistent in the return of the warts when removed by the direct

method and had not responded to tracheotomy, although the tube had been worn over a year. One application of the fulgurating spark resulted in their immediate disappearance, from which I concluded that fulguration would be the solution to the problem. Subsequent experience, however, has disabused my mind of this hope as by fulguration the growths can be immediately and effectively removed; but they return with the same regularity as when removed by surgical means, although the length of time intermediate between the destruction of the growth and its reappearance is longer.

From the fact that in some instances of multiple papilloma of the larynx removal will result not only in the reappearance of these growths in their former situation, but likewise on adjacent mucous membranes, it has occurred to me that there might be an infectivity embodied in certain of these growths, in which, if an emulsion were made of the growth itself, hypodermic injection might prove beneficial in their complete eradication. Since giving expression to these ideas on several occasions no case has presented itself in which a sufficient quantity of the growths could be obtained for this purpose. It is a well-known fact, however, that not only laryngeal warts but skin warts will reproduce themselves on abraded skin or mucous surfaces in some instances and not in others.

SEQUELS

Barring the few unfortunate instances in which wearing the tracheotomy tube over long periods of years has not eventuated in the disappearance of the papilloma, the prognosis is favorable to their disappearance. The voice, however, in the majority of instances is altered in some degree and probably in children in whom multiple papillomas have existed it may never attain perfection thereafter. In isolated, pedunculated papilloma on the vocal cords of the adult removal is ordinarily followed by complete restoration of voice. When the tracheal tube has been worn for a year or more the cartilaginous rings lose their elasticity and one the withdrawal of the tracheotomy tube the trachea collapses on inspiration. This may be largely obviated by frequent withdrawals of the tube during the course of the treatment, so that the tracheal rings may expand and contract during the respiratory act. When the time has arrived for the permanent withdrawal of the tube it is often advisable to insert tubes diminishing in size until the minimum-sized tube has been reached, after which time it is sometimes necessary to insert a rubber catheter until the larynx and subglottic structures have resumed their normal resiliency. A straight tracheal tube, with just sufficient flange at the end to hold it within the tracheal incision, is often better than one which is curved and extends far down into the lumen of the trachea, for in this way the thickening incident to friction against the tracheal mucosa is obviated. In cases of multiple papilloma in children after tracheotomy has been performed, close observation will reveal these growths extending into the upper part of the tracheal wound and impinging against the tube. I have seen the entire space between the tracheal wound and the larynx almost completely filled with these growths following operations on the laryngeal neoplasms. Occasionally there will result the necessity for a plastic operation to close the tracheal wound completely, but in the majority of instances the withdrawal of the tube will be followed by the wound closing by granulation.

REPORT OF CASES

CASE 2.—An Italian boy, aged 7, presented himself at my clinic in 1909 complaining of hoarseness from birth. Examination of the larynx revealed multiple papillomas. One of the papillomas was removed for microscopic examination, and a syphilitic base was revealed. One injection of salvarsan resulted in the complete disappearance of all the growths, within about three weeks time. The voice was not restored, but was markedly improved from a hoarse whispering voice to a hoarse loud voice. About two months after the injection of salvarsan the boy was brought to the clinic suffering from pronounced jaundice, which did not respond to treatment. His condition became worse until he died about three weeks after observation. No necropsy was permitted. Treatment for his inherited syphilis was instituted at a time when large single doses of salvarsan were being administered, and I have often wondered if repeated smaller doses would not have resulted in the same favorable outcome to the laryngeal condition and possibly obviated the liver complication.

CASE 3.—J. S., a boy, aged 3½ years, was admitted to the clinic June 27, 1912. He had complained of hoarseness with whispering voice dating back eighteen months. He had frequent attacks of dyspnea and at all times suffered from difficult respiration. His health was otherwise good. No specific history was obtainable. Examination of the larynx revealed multiple papillomas on both vocal cords and extending from the anterior commissure to the arytenoids. The color was that of the mucous membrane. July 11, fulguration was applied by the use of the Jackson speculum under chloroform anesthesia. Repeated applications of the fulgurating spark were made, July 18, August 1 and 15, and September 5 and 12. After each of these fulgurations the larynx would remain clear of laryngeal warts for a short space when they would recur. On the whole, the larynx showed some improvement up to the time of the last fulguration, September 12. At this time it was decided to make a severe test of the fulgurating spark, as it was necessary for the child to be removed to a different locality where he would not have opportunity of treatment or observation. Following this seance there was marked laryngeal reaction and labored breathing, continuing for five days. As the reaction was so severe it was determined to do a tracheotomy, which was performed, September 17. The next attempt at fulguration was made October 24, but as the patient took the anesthetic badly the spark was not applied. Subsequent to this, a number of fulgurations were given at varying intervals, it being easier of accomplishment after the tracheotomy-tube was in place. On the night of January 20, about 4 a. m., the child pulled out the tracheotomy-tube and died from asphyxia before the house surgeon could reach the ward. The nurse made an unsuccessful attempt to reinsert the tube.

CASE 4.—E. F., a girl, aged 3 years, came to the clinic July 11, 1912, with symptoms of whispering voice and difficult breathing since birth. Her health had otherwise been always good. There was no history of either tuberculosis or syphilis. Examination of the larynx revealed multiple papillomas. Fulguration was first applied July 12, and there was immediate improvement in the voice. It was again applied July 18 and August 1 and 15, when she returned home and came to the hospital for treatment. September 1 she developed a diffuse bronchitis and was brought to the hospital; she recovered. September 28 she was fulgurated, following which there was some edema. In October she developed diphtheria in the ward and an immediate dose of 10,000 units of antitoxin was administered. She was carried to the infectious hospital where intubation was done, but died a few days later of pneumonia.

CASE 5.—A history of this case has been mislaid, so that the report is made from memory. The patient was a little girl about 3 years old, who complained of hoarseness for two years. She was brought to the clinic where in addition to tonsils and adenoids the presence of laryngeal papilloma was discovered. Under local anesthesia fulguration was applied at varying intervals for three times, after each of which the larynx cleared up and the voice became better. There was

no history of tuberculosis or syphilis. The child was well nourished and thick-necked. There was a long period following the last intubation in which there was no recurrence of the papillomatous growths. Just as hope was being raised that we had succeeded at last in overcoming the papilloma, the child developed measles and was taken to the Willard-Parker Hospital, where she recovered from her measles without any recurrence of the growths. Since the dismissal from the hospital no subsequent history has been obtainable.

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ABSTRACT OF DISCUSSION

DR. ROBERT LEVY, Denver: It is interesting to know that Dr. Smith has recommended in his paper a return to the thought expressed a great many years ago concerning the value of treatment by tracheotomy and waiting for the spontaneous disappearance of these growths. They have a certain life history and tend to disappear spontaneously, and so when we do a tracheotomy we put the larynx at rest and wait until this occurs. In a paper read a good many years ago I related a case that, to my mind, proved this and so up to a very recent time I have held that view and treated my patients accordingly. As a matter of fact, however, I think the time is coming, or has come, when we most modify our views somewhat. The reason, I believe, for the recurrence of these papillomas with such marked rapidity after they have been removed is that they were not removed thoroughly by our older methods, and this is particularly forced on one by the reading of the last article of Albrecht, in which he reports nine cases, some of which had been operated on by the ordinary way, by direct endoscopy, with constant recurrence, after which they were operated on by the suspension method. It was noticeable that the patients got well quickly and remained well. It may be that in all these cases the time had come for these growths to disappear, but the fact remains that no recurrence took place after they had been removed by the suspension method, while after their removal by the older method they did return rapidly. Of course, the time is somewhat recent to state that as a fact on which to base our future conduct in these cases. We can, however, by this means remove these growths very thoroughly. I have a case at present that proves Dr. Smith's infection theory; a child eight months old had a small papilloma in the anterior commissure; under direct suspension this was removed. I thought it a particularly easy case and one that would remain well but the growth returned with increased activity.

DR. SAMUEL IGLAUER, Cincinnati: Dr. Smith brought out most of the methods of treatment. In the series of cases that Dr. Levy referred to, I think the electrocautery was used after the removal of the papillomas. The removal of the papilloma by the suspension method, then cauterization, and perhaps prophylactic intubation to prevent edema would be good treatment. I now have two cases under treatment in which, through the kindness of Dr. Ransohoff, I have been able to employ radium. In one case, in an infant, the radium tubes were applied on the outside of the neck for several hours. A slight burn occurred on the skin but the papilloma did not disappear. In the second case I put the radium inside the larynx three times, with better results, and I think perhaps if Dr. Smith were to apply the radium for longer periods he might get better results. In my case it was applied five or six hours with no bad effects. The first time I tried radium I had some trouble in keeping the capsule in the larynx and I hit on this method; I put the capsule in a rubber tube slit on the side, like a drainage tube, with a string tied to it. The V-shaped cuts in the rubber tube acted like flanges to retain it in position. It held so well that on one occasion I had some trouble in removing it.

What is Sleep?—That is a nice problem for us to tackle. A French author said of life what we may say of sleep; it does not define itself, it simply manifests itself.—H. Crichton Miller, *Medical Press and Circular*.

THE TREATMENT OF CHRONIC PYELITIS *

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It is surprising how slow we have been to appreciate the benefits to be derived from pelvic lavage for the treatment of chronic pyelitis. It is probable that much of our tardiness in adopting this extremely beneficial treatment is largely due to insufficient methods of diagnosis, so that we were not able to select with a sufficient degree of accuracy the cases most suitable for lavage.

The successful treatment of chronic pyelitis is largely dependent on accurate examination and diagnosis. While it has been denied that chronic pyelitis can exist without involvement of the parenchyma, clinical experience and examination of pathologic material prove that a pure pyelitis can occur. Most cases of pyelitis are secondary to an infection of the kidney parenchyma or part of a pyelonephritis. The cases of pyelitis which are only a part of a pyelonephritis will not be discussed in this paper. While it is probably true, in most instances, that a pyelitis is secondary to a previous infection of the parenchyma, in many cases this infection in the parenchyma entirely disappears, leaving the pelvis and ureter alone involved. The majority of kidney infections, nontuberculous, are undoubtedly secondary to some predisposing factor, such as stone, tumor, stricture or other mechanical obstruction, and the amelioration or cure of the infection in such cases is dependent on the removal of the predisposing cause. It is surprising how frequently even a severe infection of the kidney and pelvis will disappear when these factors have been remedied. The differentiation of simple pyelitis from pyelonephritis may be quite difficult, and is practically impossible except by the employment of functional estimation. In pyelonephritis the function will be decreased, while, if it is a pure pyelitis, no reduction in function will be observed. Of course, one cannot always exclude the presence of a slight area of pyelonephritis which may not be sufficient to reduce the function, while in occasional cases the function may be diminished as the result of a previous pyelonephritis which has healed, leaving the pelvis still involved. One such case probably of this type is reported below. The presence or absence of albumin in the catheterized specimens has only occasionally been of diagnostic value in our hands. Pyelography is useful also in showing us changes which have occurred in the pelvis as a result of the infection, and gives us information which may be of considerable value from the point of view of prognosis. In our experience, the organism causing the infection has very little influence on the prognosis.

TREATMENT

When it has been determined accurately that we are dealing with a simple pyelitis, renal lavage is instituted, and in these selected cases the results of treatment have been little short of brilliant. We employed various solutions, such as argyrol, protargol, liquor formaldehydi, nitrate, phenol (carbolic acid) and aluminum acetate, but at the present time we have

* From the Urological Department of the Johns Hopkins Hospital.
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come to depend largely on silver nitrate and liquor formaldehydi. Vaccines have proved of very doubtful value, although we have employed them extensively. Hexamethylenamin has also proved of questionable value as far as the renal infection is concerned. Its value at the kidney level, as Hinman has shown, is very slight. The cases in which the lavage has been employed have been divided into the following groups:

1. Those in which the catheterized specimen shows the presence of a fairly active infection with a normal function and in which the collargol shows very few changes in the pelvic outline. The prognosis in this type of case is very favorable. We begin with injections of from 5 to 10 c.c. of 0.5 per cent. silver nitrate, the tip of the catheter being rather low down in the ureter. It seems advisable to inject from low down as in the majority of cases there is present also a certain degree of ureteritis, as well as pyelitis. The strength of the injection is gradually increased until we have used as strong as 5 per cent. It does not seem advisable to begin to inject with a very strong solution, because the reaction may be rather severe. The tolerance of the individual and the degree of reaction should be tested out first with weaker solutions. The occurrence of a fairly good reaction, however, is not to be avoided, as in the majority of cases this reaction is necessary before the infection can be eliminated. The splendid results obtained can be seen from the histories of a few appended cases:

CASE 1.—P. L. P., aged 43, was always healthy until November, 1912, when he was suddenly seized with chills and fever and soon afterward developed frequency and painful micturition. Since then he has had repeated attacks of chills and fever, the urine has been cloudy and the general health failing. Patient has lost 40 pounds during the last six months. Seen Jan. 19, 1913. Bladder urine was cloudy and contained pus and colon bacilli. Ureter catheterization showed a normal and equal function on each side, but from the right kidney the urine was cloudy and contained pus and colon bacilli. From the left kidney the urine was clear macroscopically and on microscopic examination showed no pus-cells or bacteria. Collargol injection showed the pelvis and ureter apparently normal.

Jan. 26, 1913, the right kidney was catheterized and 10 c.c. of 0.5 per cent. silver nitrate was introduced. Following this first injection there was a marked improvement in the bladder urine. Four days later he was again catheterized and 0.5 per cent. silver nitrate again injected. Following the second injection there was some reaction. Within a week the bladder urine became perfectly clear and negative for infection on microscopic examination. Patient has remained entirely well and there has been no recurrence of the infection.

Another case is of particular interest because there was present a double infection, a *Staphylococcus albus* and a colon bacillus.

CASE 2.—S, aged 38, seen March, 1914, had an unimportant past history except that he had had numerous attacks of gonorrhea. In December, 1912, patient had a chill and an elevation of temperature ranging from 102 to 106 F. Some days later he developed pain in the left kidney region. This attack of chills and fever cleared up in about three weeks. Since then he has had numerous attacks of chills and fever, sometimes associated with aching pain in the left lower back, which does not radiate. The urine has been cloudy since the onset of his present trouble. Very little frequency is present, and practically no urinary symptoms. On examination, patient is a slender, healthy-looking man. The kidneys are both slightly descended but do not seem enlarged. The bladder urine is quite cloudy and on microscopic examination contains pus, bacilli and cocci. (Cultures show these organisms to be colon and *Staphylococcus albus*, respectively.) Catheterization of the kidneys showed the urine from each side to contain pus, bacilli and cocci. The function was equal and normal on each side. Roentgen examination of the kidney was negative, and pyelography showed both pelves and ureters practically normal.

March 27, 1914, 8 c.c. of 0.5 per cent. silver nitrate was injected into each kidney. No reaction followed. March 30, 2 per cent. silver nitrate was injected into each kidney and this was followed by a moderate amount of pain in each kidney, more marked on the right side. April 6, 6 c.c. 2 per cent. silver nitrate was injected into each kidney pelvis. There was no pain following this treatment. April 11, the urine from each kidney was still slightly turbid and on microscopic examination contained a fair number of leukocytes, some bacilli and no cocci. Six c.c. of 5 per cent. silver nitrate was injected into each kidney pelvis. The patient suffered from considerable pain following the treatment and was rather uncomfortable for several days. Within three days the urine became entirely clear and repeated examinations failed to show any presence of infection. Patient has remained well until the present date. It is of interest that the staphylococcus disappeared before the colon, the colon infection being dislodged only by the use of the strong silver-nitrate solution.

The following case is of interest because of the marked difference in function between the two sides, and the presence of a double infection in the right kidney and a coccus infection in the left.

CASE 3.—O., aged 42, was seen April 3, 1914, with a history dating back seven months. The onset of symptoms was with sharp, sudden pain in the right side, fever, nausea and vomiting. Since this first acute attack the patient has had several less severe. Has dull pain at times in the right flank and back and some frequency of urination and urgency. Has noticed that the urine has been quite cloudy since the beginning of his illness. On examination, patient is a well-nourished man, the right kidney is not palpable but there is some tenderness on deep pressure. Leukocytes on admission, 16,000. Roentgen examination is negative, bladder urine cloudy, specific gravity 1.025, acid, no sugar, trace of albumin, microscopically numerous pus-cells, staphylococci and bacilli.

April 7, cystoscopic examination and catheterization of ureters. Bladder somewhat injected, trigon reddened. Catheterization of the ureters gave the following results, the urine being collected for one-half hour.

Right:	Left:
Urine cloudy.	Urine clear.
Phthalein appeared in 7 min.	Phthalein appeared in 6 min.
Excretion 2 per cent. plus.	Excretion 29 per cent.
Urea 0.02 per cent.	Urea 0.17 per cent.
Microscopically: pus-cells, staphylococci and bacilli.	Microscopically: no pus-cells, no bacilli but some staphylococci.

On account of the leakage it was impossible to get an accurate estimation of the function at this examination, but 29 per cent. was excreted by the left kidney, 2 per cent. was collected from the right and the leakage amounted to 14 per cent. Even adding the leakage to the excretion of the right kidney, it can be seen that the function is only half that of the left. A collargol showed the pelves normal. Pelvic lavage was begun, at first using 1:4,000 liquor formaldehydi, later 0.5 per cent. silver, and this was gradually increased to 2 per cent. April 30, the findings were as follows:

Right:	Left:
Urine macroscopically clear but on microscopic examination contains a few bacilli and cocci and an occasional pus-cell. Amount 21 c.c.	The urine was macroscopically clear but still contained groups of cocci. Amount 53 c.c.
Phthalein 12 per cent.	Phthalein 30 per cent.
Urea 0.6 gm.	Urea 0.7 gm.
No leakage.	

Patient received two subsequent treatments at weekly intervals, with 3 per cent. silver nitrate. The urine at the last examination was entirely negative microscopically, one month after the last treatment. The difference in function

between these two sides, both in the beginning and at the end of treatment, indicates either that the function of the right kidney was reduced from a previous pyelonephritis which had been cleared up, or that we are dealing with the infantile type of kidney. The equal concentration on each side would rather indicate the infantile type.

Another case illustrating the value of the strong silver nitrate when weaker solutions had absolutely failed to eliminate it, is the following:

CASE 4.—G. R. M., aged 20, was seen July 14, 1913. About two months ago patient noticed that he began to have frequency of urination and considerable pain on emptying the bladder. His general health seems good; the bladder urine is cloudy microscopically, shows pus and diplococci, which on culture prove to be a variety of *Staphylococcus albus*. On ureteral catheterization, the urine from the left kidney was slightly cloudy and on microscopic examination contained pus-cells and numerous cocci. The urine from the right kidney was clear. A pyelogram of the right kidney and ureter seemed perfectly normal. Roentgenoscopy was negative for stone. Total function was normal and the function of the left kidney was normal and equal to that of the right, as determined by phenolsulphonephthalein. Pelvic lavage was instituted and patient received four lavages of 1:4,000 liquor formaldehydi at five-day intervals; then two lavages of 1 per cent. silver nitrate at intervals of a week. At the end of this time there was no change in the infection present. It was then decided to inject the kidney pelvis with 5 per cent. silver nitrate, and about 10 c.c. was employed. Following this, patient had a fairly severe pain in the kidney region for several hours. The next day the bladder urine was smoky and on microscopic examination contained a good many blood-cells and a few leukocytes, but no bacteria. On the fourth day following the employment of the 5 per cent. silver nitrate the bladder urine was absolutely clear, microscopically negative for cocci and pus-cells. Patient was kept under observation for several weeks, and during that time the urine remained perfectly normal. Six months later he reported that he had remained well up to that time and that the urine was perfectly clear and normal-looking.

It is of interest here that no result was obtained until the strong silver nitrate had been employed and a considerable reaction produced.

2. In long-standing pelvic infections, in which marked changes have occurred in the pelvic wall, as shown by pyelography, and in which one finds in the catheterized specimens very few leukocytes and only an occasional bacterium, the prognosis is not so favorable. The infection in these cases is of a low grade, usually quite deep in the pelvic wall, so that it is very difficult to eradicate it. Occasionally, in these cases, after a certain amount of treatment, the infection may apparently disappear, but it usually recurs again. These cases sometimes have slight exacerbations when one finds considerable pus and bacteria and at other times almost a perfectly negative urine, as far as the most careful microscopic examination can determine. One should be very careful about giving a good prognosis as far as eradication of infection is concerned, in this class of case.

3. In infections of the kidney pelvis, associated with a certain amount of pelvic dilatation and varying amounts of residual urine, pelvic lavage has also been of comparatively little value. The most unfavorable are those in which the condition is largely a bacteriuria. While it is possible in many cases by lavage to improve to some extent the character of the urine and decrease the severity of infection, the results of lavage have not been particularly gratifying so far as complete eradication of infection is concerned. In cases in which nephrectomy is contra-indicated, pelvic lavage should be tried because not infrequently, while it is impossible to entirely eradicate the infection, a great improvement in the condition may follow renal drainage and lavage. In these infections with mild hydronephrosis, silver nitrate seems to give less favorable results than solutions of formaldehyd, which we employ in strength from 1:5,000 to 1:2,000. Under such conditions, it is advisable to introduce a catheter into the pelvis of the kidney so as completely to empty the residual urine.

ABSTRACT OF DISCUSSION

DR. I. S. KOLL, Chicago: I heartily agree with Dr. Geraghty as to the indications for pelvic lavage, that is, as differentiating a pyelitis from a pyelonephritis. My experimental work, however, made me believe that as a pathologic entity we have no such thing as a pyelitis, because twenty-four hours after 1 c.c. of a twenty-four-hour colon-bacillus culture is injected into the ureter, the kidney, when examined histologically, will show a definite pyelonephritis, care having been taken not to traumatize the kidney or ureter. It certainly was a revelation to hear that any one was brave enough to inject silver nitrate in 5 per cent. solution into the ureter and pelvis of the kidney. I believe everything Dr. Geraghty says, but let us, for a moment, consider the rationale of the use of nitrate of silver. In 5 per cent. strength it is a powerful astringent and escharotic, and has a tendency to form a coagulation of the epithelial cells and prevent any penetration of the drug itself. It therefore has not much chance of doing good. The work that I did with liquor alumini acetatis five years ago showed that in chronic pyelitis cases there is a definite penetration of the bacteria into the tissues. How long has Dr. Geraghty followed his cases? What percentage has shown recurrences? When does he cease to use lavage of the kidney? I differentiate strongly between a clinical cure and a bacterial cure. I never stop lavaging in my cases until a catheterized specimen from the ureter of the infected side fails to give a culture of the organism, which in 98 per cent. of the cases is due to the colon bacillus. That is an all-important point, I believe, and I am sure that most of us have had recurrences time and again because we stopped our treatment before the bacteria disappeared. It is not difficult to get rid of the pus-cells, but the colon bacillus will remain there in pure culture for a much longer time.

DR. MARTIN KROTOSZYNER, San Francisco: I am glad to hear that Dr. Geraghty has used strong solutions of silver nitrate, because I have always held that weak solutions of 1:10,000 never have any beneficial effect. I have never gone as high as 5 per cent., but, as a rule, I start with 1:500 and go up to 1 per cent., and I admit that my assistants would look at me askance when I carried my injections up to 1:200 and even 1 per cent., but I am glad to see that at Johns Hopkins they do not stop until they reach 5 per cent. At what intervals does Dr. Geraghty use these injections? I want to take exception to one more statement. With Dr. Geraghty I believe in the teaching of Casper that the differential diagnosis of pyelitis and pyelonephritis can be made on the basis of the functional kidney tests. I have seen lately a case in which I was mistaken. I exposed the kidney in a case in which I had made the diagnosis of pyelonephritis from a very low kidney function on the affected side. When I opened the kidney I found it perfectly normal, with simply a dilated pelvis, showing the presence of a pyelitis. I will admit the kidney was interfered with in function by adhesions around the ureter, but the pathologic report on the pieces that were excised confirmed the preoperative diagnosis of pyelonephritis.

DR. LOUIS E. SCHMIDT, Chicago: I disagree, to a certain extent, with Dr. Geraghty. He makes rather a clinical diagnosis, and of course when we talk about cures we also depend on the clinical results. It would really be interesting to be able to demonstrate kidneys of this kind after death really to see what the exact changes have been, that

is, if the patient has really passed through a distinct pyelitis. I do not believe that a pure and simple pyelitis exists. I have always been under the impression that there is at least a very mild degree of pyelonephritis present; hence that all this local treatment is, at least in the vast majority of instances, not followed by the best results. Of course, Dr. Geraghty divides his cases and states positively that there is one type, exceptionally common, which responds to this mode of treatment. I do not believe pyelography is necessary for the diagnosis of pyelitis. I object to the general use of this method of examination. I do not see what distinct information we can get, except possibly slight changes in the papillae, etc., but I do not believe a diagnosis can be made from that. If we do a ureteral catheterization and find that we have a slight enlargement of the pelvis, I think that will give us a certain amount of information, and naturally the ordinary urinary examinations that go with it are useful; but in cases of this kind I do not think that pyelography is absolutely essential in the diagnosis. As it is a question of formulating the exact conditions of when we should do pyelography, I would be glad to hear what Dr. Geraghty has to say about this method of examination in differentiating these conditions. When it comes to the diagnosis of pyelitis, I lean more on the clinical course than on a lot of these so-called more exact methods. When we come to the treatment a good many depend on internal medication. Of course, there are objections to that, but I am still skeptical as to lavage. I have gone through that for a good many years. It is true that I have not treated all cases indiscriminately, but I have still to see any practical results from lavage of the pelvis of the kidney.

DR. W. E. STEVENS, San Francisco: Does Dr. Geraghty use vaccines in the treatment of any of these forms of pyelitis?

DR. JOHN T. GERAGHTY, Baltimore: A pyelitis cannot be considered cured until repeated examinations have shown the urine to be free from infection and bacteriologically sterile. In our series of cases we have only considered as cured those in whom this result was obtained. Pyelography has proved of considerable value in differentiating those with marked changes in the pelvic wall from the type in which these changes have not occurred, and the knowledge obtained in this way has been useful from the point of view of prognosis. I can see no objection to using pyelography in these cases, particularly when it is done carefully and the gravity method alone is employed. Since employing the gravity method of injecting the pelvis, we have had no ill results. We used vaccines some years ago quite extensively in the treatment of pelvic infections, but were never able to see any specific benefit which could be ascribed to the vaccines alone. At present we employ them but seldom.

THE RELATION OF UREA TO THE TOTAL NITROGEN OF THE BLOOD IN HEPATIC DISEASE *

CLIFFORD B. FARR, M.D.
AND
EDWARD B. KRUMBHAAR, M.D.
PHILADELPHIA

The object of this investigation was to test by the new and dependable method of Folin the assertion of various French investigators that in cirrhosis and other diseases of the liver the percentage of urea in the blood is diminished.

Folin's method had given one[1] of us excellent results in the study of the blood of nephritis, and although we were skeptical about obtaining definite evidence of changes in the blood in hepatic disease, the accuracy of Folin's method seemed to offer the best means of reaching a conclusion. Our scepticism may be explained as due in part to our belief that even in so extensive a disease of the liver as cirrhosis, enough normal liver parenchyma remains—the so-called "factor of safety"—to carry on the normal function, and also to the well-known fact that in all diseases of the liver of the cirrhotic type, regenerative proliferation of hepatic parenchyma is more or less constantly present. With the wide margin of safety offered by these two factors it appeared highly improbable that a noteworthy diminution in urea formation would be found.

UREA AND TOTAL NITROGEN OF BLOOD IN HEPATIC DISEASE

	Diagnosis	Total Nitrogen mg.	Urea mg.	Remarks
I. CIRRHOSIS				
1.	Portal cirrhosis	25.5	12.4	
2.	Portal cirrhosis	34.2	17.7	
3.	Portal cirrhosis; splenomegaly	28.9	14.4	Occasionally albumin and casts
4.	Portal cirrhosis	33.8	16.8	
5.	Portal cirrhosis	23.5	12.7	
6.	Portal cirrhosis	22.2	12.7	
7.	Portal cirrhosis	40.9	20.0	Nephritis
8.	Hypertrophic cirrhosis*	30.3	15.3	Albumin and casts
9.	Hypertrophic cirrhosis	45.9	24.1	Nephritis
II. CANCER AND JAUNDICE				
10.	(1) Carcinoma of liver	69.5	30.0	Occasionally albumin
	(2) Carcinoma of liver†	35.0	13.4	
11.	Carcinoma of liver, jaundice	72.7	high‡	Albumin and casts
12.	Catarrhal jaundice	35.2	14.3	
III. CHRONIC PASSIVE CONGESTION OF LIVER				
13.	Passive congestion; myocarditis	24.7	12.2	Occasionally albumin
14.	Passive congestion; chronic endocarditis	31.3	16.6	Albumin and casts
15.	Passive congestion; cardiorenal	23.9	11.6	Albumin and casts
16.	Passive congestion; chronic endocarditis	22.7	11.0	
17.	Passive congestion; syphilitic aortitis	38.2	22.5	Albumin and casts
18.	Passive congestion; chronic endocarditis	51.2	33.9	
IV. CONTROLS				
19.	Typhoid fever (suspected cirrhosis)	23.7	11.2	Occasionally albumin
20.	Nephritis (?)	24.7	10.4	
21.	Tuberculous hip disease	34.1	19.3	
22.	Convalescent typhoid	23.9	12.2	
23.	Normal	30.1	14.8	

* Reported previously by Farr and Austin, Case 56.
† Second test performed two weeks later.
‡ Too high to be read with dilution employed.

The earlier observations based on the older methods of study are as follows: Morel and Mouriquand,[2] using the Pflüger-Braunstein method, found that whereas in nephritis the percentage of urea in the blood varied from 64 to 77 per cent., in hepatic disease it ranged from 33 to 50 per cent.

* From the John Herr Musser Department of Research Medicine, University of Pennsylvania.

1. Farr, C. B., and Austin, J. H.: The Total Non-Protein Nitrogen of the Blood in Nephritis and Allied Conditions, Jour. Exper. Med., 1913, xviii, 228.

2. Morel, A., and Mouriquand, G.: Urémie et azotémie; considerations sur la signification de la retention des corps azotés dans le sang des cirrhotiques, Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxv, 266.

Courmont, Boulud, Savy and Blanc-Perducet[3] studied the urea percentage in the blood by Boulud's method. Twenty-two cases, mostly nephritics, gave an average of 80 per cent., whereas the one cirrhotic studied gave 42 per cent.

Brodin[4] also found that the urea percentage was decreased in hepatic disease and the "non-ureic" nitrogen correspondingly augmented. Finally, Chauffard[5] called attention to the fact that the estimation of the urea percentage might be inaccurate on account of changes due to diet or an accompanying nephritis, and suggested, as a better criterion, the estimation of the "residual or non-ureic" nitrogen. By this was meant the determination of the difference, in milligrams per hundred c.c., between the urea and the total non-protein nitrogen of the blood.

Our results are shown in the accompanying table, and present the average of duplicate estimations made according to the method of Folin and Denis.[6] The figures indicate in milligrams the respective amounts of urea and total nitrogen per hundred c.c. of blood. The percentage of urea and the difference between total nitrogen and urea (Chauffard) were calculated in each instance, but as these figures did not prove to be of value, we have, for the sake of brevity, omitted them.

SUMMARY

In the various forms of cirrhosis, as presented in the first portion of the table, the total nitrogen was markedly increased only in those accompanied by definite nephritis. The moderate increase seen in rare instances may have been due to slight renal involvement not shown by our clinical tests. The percentage of urea was in each case approximately 50 per cent., which we regard as normal.

The second group of three cases, in each of which severe functional disturbances might have been expected, did in fact show changes suggestive of hepatic insufficiency. The percentage of urea ranged from 38 to 43 and the difference from 21 to 40. Similar results were occasionally found in cases of eclampsia, reported elsewhere,[7] in which impaired liver function was presumably present.

Our third group consisted entirely of cases of chronic passive congestion of the liver secondary to heart disease. In none, according to the criteria mentioned, did we find any suggestion of hepatic insufficiency. The urea percentage ranged from 47 to 66.

In the fourth, or control group, the urea percentage ranged from 42 to 57, essentially normal figures.

In conclusion it may be stated that our observations offer little or no support of the view that in destructive disease or severe functional derangement of the liver the percentage of urea in the blood is reduced. In the group of diseases studied our figures are close to the normal. In cirrhosis of the liver, a disease in which functional tests would be of the greatest value the determination of blood urea offers no information of use in diagnosis.

3. Courmont, Boulud, Savy and Blanc-Perducet: Sur le coefficient azoturique du serum. Bull. et mém Soc. méd. d. hôp. de Paris, 1913, xxxv, 259.

4. Brodin, P.: Modification de la teneur azotée du serum sanguin au cours de l'insuffisance hepatique, Comp. rend. Soc. de biol., 1913, lxxiv, 26.

5. Chauffard, A.: A propos des variations de la teneur azotée de serum chez les hepatiques, Bull. et mém. Soc. méd. d. hôp. de Paris, 1913, xxxv, 273.

6. Folin, O., and Denis, W.: New Methods for the Determination of Total Non-Protein Nitrogen, Urea and Ammonia in Blood, Jour. Biol. Chem., 1912, xi, 527.

7. Farr, C. B., and Williams, P. F.: Total Non-Protein Nitrogen of Blood in Toxemias of Pregnancy, Am. Jour. Obst., 1914, lxx, 614.

LATENT ATYPICAL MALARIA COMPLICATING THE PUERPERIUM

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CHICAGO

Manaberg claims that pregnancy constitutes no protection against malarial infections, notwithstanding the statements of the older observers to the contrary. In a gravid woman, malarial infection often takes on a severe form. The influences making for anemia in cases of even slight infections are more potent in pregnant women than in others, as abortions frequently occur.

Weatherly reported that in India, 46 per cent. of his cases aborted, while in England the frequency amounts to only 3.56 per cent.

Pellereau reports the same conditions in Mauritius. The abortion does not require a fever nor a paroxysm for its production, the fetus usually being dead before abortion occurs.

Weatherly also finds sterility among women in India of common occurrence, which he attributes to malaria.

According to Chevers the act of parturition often operates as an exciting cause in an outbreak of malaria, during which lochial and lacteal secretions cease. The same was reported by Parker of New York. He had only one death among forty-seven cases. Repeated blood examinations would naturally be very desirable in similar cases, as the possibility of septic infection is very great. Since the parasite of masked malaria is not always found in the peripheral blood, special emphasis is laid on the repetition of blood-tests in obscure cases. The frequency of masked malaria varies inversely with the care and thoroughness employed in diagnosis, and diagnosis must be based on microscopic findings and therapeutic tests, as symptoms *per se* are only confusing.

The case about to be described is one of latent atypical malaria complicating the puerperium in a patient afflicted with chronic nephritis of long standing. This report is of more than passing interest to the general practitioner and especially to the obstetrician for clinical study, as no like case has been found in the literature.

REPORT OF CASE

Mrs. X., aged 25, American, lived in Illinois all her life. When 2 years old she had a severe attack of "summer complaint." Puberty at 12 years was uneventful so far as the establishing of normal menstruation was concerned, but the patient was ill four weeks at that time as the result of a fall on her head while at turning school. At 15 years the patient became anemic, which condition persisted to the age of 18 when she was unable to walk for one month on account of dropsy. During this period she was afflicted with frequent fainting spells.

June 20, 1900, at the age of 20, the patient was married. May 9, 1901, aged 21, she was confined and delivered of a fine healthy boy weighing about 10 pounds. On the sixth day after labor she had chills and fever which at that time I attributed to a probable infection as there was no trained nurse in attendance. There were no manifestations of puerperal sepsis, no pelvic symptoms, no offensive lochia and no stitch infection. The perineal lacerations were bilateral though not extensive; the cervix sustained slight tears on both sides. Unfortunately, no clinical record could be made of this sickness which lasted about three weeks. The treatment was not antimalarial, but tonic and supportive—entirely symptomatic. The patient made an uneventful recovery and, to use her own expression, "enjoyed better health than ever

before in all my life." This state of good health lasted until her next pregnancy. Feb. 22, 1905, aged 25, at 4:15 a. m., patient gave birth to a 12-pound boy in St. Mary of Nazareth Hospital, Chicago. There were extensive lacerations of the cervix uteri and of the perineum and more than ordinary hemorrhages. The latter caused three fainting spells. The labor came on so suddenly that I had no time to summon an intern. No vaginal examinations were made as there were no indications of any pathologic conditions, and, besides, there was no time for ascertaining details between the time of her admission, late in the evening of February 21, to the time of the spontaneous labor, 4:15 a. m. February 22. As persistent uterine inertia followed, the placenta was delivered artificially. This caused a fourth fainting spell. The patient was allowed a brief respite, until 8:15 a. m. when I repaired the cervical and perineal lacerations, using only a few whiffs of an anesthetic as she insisted on exercising her will power. A fifth fainting spell occurred in the operating-room after the completion of the suturing. During the night the temperature rose to 100 F. and the pulse to 120, but both were normal the next morning. Every function was normal with the exception of the pulse, which ranged from 90 to 100 and above—in fact the pulse was often above 100. Owing to the nervousness of the patient and the absence of any discoverable disease other than chronic nephritis with its usual comcomitants, no unusual significance was attached to this feature of the case, especially since the pulse was otherwise normal.

February 28 the left breast became indurated and painful and the patient had slight chills and complained of nausea. At 6 a. m. the temperature rose to 102⅘₁₀ F. and the pulse to 104. The breast was massaged and boric-acid fomentations and breast pump were applied. The nipple being fissured, was treated with glycerite of tannic acid. Enemata and sponge baths were given for eliminative and antipyretic purposes. Then there ensued the following play of pulse and temperature:

Date	Time	Pulse	Temperature F.
3/1	4:00 a. m.	120	103
	4:30 p. m.	128	104⅗₁₀
	8:45 p. m.	90	102
3/2	12:30 a. m.	140	104
	3:30 a. m.	120	103
	5:30 a. m.	120	100⅖₁₀
	2:00 p. m.	108	99⅕₁₀
	6:00 p. m.	100	99

Pulse then became normal. There were no symptoms of any pelvic infection, hence puerperal septicemia was excluded. As the breast was the only offending organ that was discovered at that time, I held it accountable for the vagaries of the pulse and temperature and, naturally, when these dropped to normal, simultaneously with the cessation of all untoward breast symptoms, I thought the difficulty was overcome. Urinalysis showed specific gravity 1.032; 4 per cent. albumin by volume; trace of sugar; some hyalin and a few granular casts.

The next day I was made uneasy by the following clinical record:

Date	Time	Pulse	Temperature F.
3/3	3:00 p. m.	124	100
	6:00 p. m.	128	102
	10:15 p. m.	130	104

The record remained about as above until it became more serious, namely:

Date	Time	Pulse	Temperature F.
3/4	3:00 a. m.	128	105
	8:45 a. m.	130	105⅗₁₀
	11:00 a. m.	120	104

The condition becoming alarming, I requested consultation. After an exhaustive examination consultant assured me that there was not one sign of any pelvic infection, and in his subsequent daily visits found no reason to alter his opinion.

In spite of finding no pathologic lesions of any kind, there was no improvement in the pulse-temperature wave which rose to 140 and 106⅘₁₀ and never dropped below 110 and 101, respectively. There was not even the slightest periodicity in these records. Feeling that we were making no progress and that the patient was losing ground daily, a second consultant was sought. A careful study of the case, course, examinations made and treatment given, revealed the fact that malaria was about the only disease not thought of. While the clinical record did not support any malarial theory, yet a blood examination was advised and ordered and large numbers of the parasites of the tertian variety were found.

Specific antimalarial treatment (quinin bisulphate 2 grains followed by a cup of hot water every two hours) produced good results in twenty-four hours. In forty-eight hours convalescence was established and recovery was gradual and positive. No other untoward symptoms appeared, excepting cinchonism which was overcome by adding sodium bromid, 5 grains to each dose of quinin.

After all symptoms subsided, the patient normal in every respect and ready to be discharged, she complained of slight tenderness in the pelvis. Some lochial discharges appeared March 21, 1905, which, on microscopic examination, were found to contain gonococci. The husband admitted to consultant and to me that he had been afflicted with gonorrhea.

SUMMARY

The patient never lived in a strictly malarial locality. The symptoms were not at all typical of malaria. The patient never had an attack of malaria until after labor. The anemia that occurred between the ages of 15 and 18 might have been the result of malarial intoxication (in latent form). The occurrence of irregular chills and fever in two consecutive confinements and never at any other time, with no pelvic involvement and with positive microscopic findings in the second, merits attention. The late gonorrheal complications after the second puerperium about thirty days after labor and long after other conditions were normal, was an extraordinary experience. Every case of fever following labor is not puerperal sepsis.

Finally the most important part of this paper is the lesson to be learned from a lack of thoroughness in diagnosis. I offer no apology, as there was an acute exacerbation of nephritis engrafted on a chronic nephritis of long standing, together with acute mammitis and the atypical malarial manifestations, to say nothing of the late gonorrheal infection, all of which formed a symptom-complex so confusing and so perplexing that it was indeed not easy nor yet hardly reasonable to expect to decipher such symptoms as would make for a diagnosis of malaria.

I make a strong plea for exhaustive methods of diagnosis as a routine practice, and the lesson I would take to heart if still engaged in an obstetric practice, would be to take nothing for granted and to examine all unusual cases exhaustively, carefully studying clinical data, and especially to go the limit in the laboratory methods of diagnosis.

Yellow Fever Commission.—The reports of the Yellow Fever Commission of West Africa have been issued and the following conclusions are drawn: 1. Yellow fever has occurred from time to time since 1778 in various parts of the British West African colonies. 2. There is no evidence to show that the infection in each outbreak has been introduced from outside Africa. 3. The mild nature of the attack in certain cases makes identification a matter of great difficulty. It is therefore essential that in future all cases of fever should be carefully observed and classified in order that, so far as possible, such mild cases may not pass unrecognized. 4. The attention of all workers at this subject should be specially directed to the discovery of a clinical test for yellow fever.

A METHOD OF DIMINISHING HEMORRHAGE AFTER SUPRAPUBIC PROSTATECTOMY *

EDWARD L. KEYES, JR., M.D.

NEW YORK

Discussion of the amount of bleeding that follows suprapubic prostatectomy is not likely to profit us anything. I have at various times been convinced that a certain method of removing the prostate markedly

Fig. 1.—Position of patient in author's operation with legs supported on leg-rests and with hips at an angle of about 45 degrees.

diminished the hemorrhage, but no sooner was this opinion in the way of becoming a certainty than it was rudely shattered. My personal preference is to enucleate the prostate by the so-called intra-urethral method. To avoid the hemorrhage I have tried packing, and making the incision through the mucous membrane by means of a Bottini instrument introduced into the urethra. This did not much diminish the hemorrhage, and it did have the inconvenience of leaving one of the four or five patients on whom I operated in this way with partial incontinence of urine. I next tried to

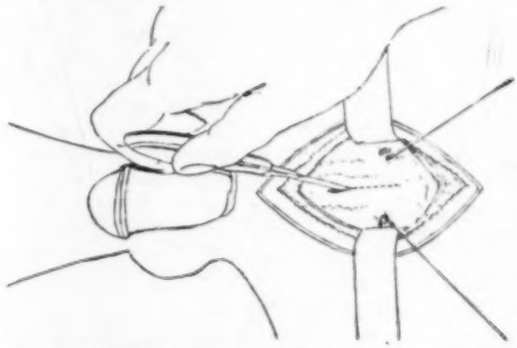

Fig. 2.—The bladder exposed through a suprapubic incision, suspended by two skin hooks; incision between the hooks.

suture the neck of the bladder in one case; the patient died of hemorrhage. Since then I have employed the following technic in ten cases:

The patient is put on the operating table in the dorsal position but with his legs supported on leg-rests so that the hips are flexed at an angle of about 45 degrees (Fig. 1). The hypogastrium, the genitals, the perineum and the adjoining portions of the thighs are then cleaned in the usual manner, and this wide field is left uncovered by towels.

The bladder is exposed through a suprapubic incision, suspended by two skin hooks, and incised between these (Fig. 2). The prostate is then rapidly enucleated between two fingers in the rectum and two in the bladder. Then a grooved staff is inserted into the urethra and a long Peaslee or Reverdin needle, threaded with a piece of catgut about 18 inches long, is plunged into the groove of the staff through the perineum (Fig. 3) quite in the same way as one uses a bistoury in doing a rapid perineal section.

The needle is passed along the grooved staff until it can be felt in the bladder by a finger in the suprapubic opening. The staff is then withdrawn and two Walker suprapubic bladder retractors[1] are introduced. These, by making lateral traction on the bladder, elevate the torn edges of the bladder neck like a veil and make it plainly palpable to the examining finger.

The needle, carrying the catgut, is inserted through the edge of this veil, just deep enough to get a good hold, at a lateral angle (about 7 o'clock) (Fig. 4). Then by depressing the handle of the needle its eye is brought up into the suprapubic wound so that the catgut can be disengaged (Fig. 5). This accomplished, the needle is withdrawn from the puncture in the bladder neck and reintroduced at a corresponding point on the opposite side, again threaded with the catgut, allowing plenty of slack (Fig. 6), then rapidly

Fig. 3.—Peaslee or Reverdin needle threaded with catgut inserted through perineum along grooved staff.

withdrawn through the perineum. The threading and unthreading of the needle is expedited by removing the corresponding Walker retractors immediately after the puncture of the bladder neck on each side. If an indwelling catheter is to be employed, it must be inserted now.

After the needle has been withdrawn we have in our hands the two ends of a suture entering through a sin-

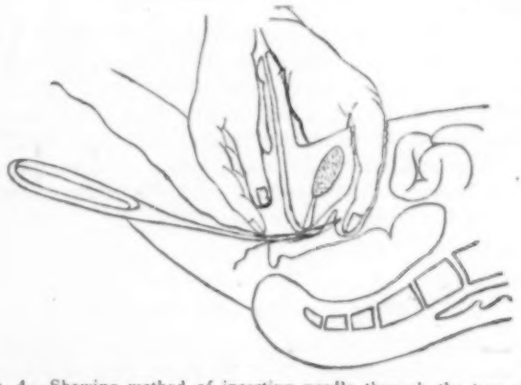

Fig. 4.—Showing method of inserting needle through the torn edges of the bladder neck, made tense by retractors.

gle puncture in the perineum, passing through the deep urethra and to the bladder neck and catching the lower segment of this at its two angles (Fig. 7). Traction on the ends of the loop pulls the bladder neck down

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. After becoming accustomed to the technic of the operation one may dispense with this retraction.

into the urethra. It thus controls hemorrhage, chiefly, I fancy, by putting the bladder neck on tension. The ends of the suture are then tied about a short rubber tube laid against the perineum, after the bladder neck has been pulled down very firmly (Fig. 8).

Fig. 5.—The eye of a needle is brought up into the suprapubic wound by depressing the handle so that the catgut can be disengaged. The needle is then withdrawn.

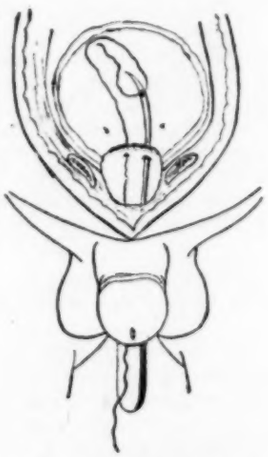

Fig. 6.—The needle reintroduced at corresponding point on the opposite side, again threaded with catgut and then withdrawn through the perineum.

Drainage is provided by the usual suprapubic tube or by a catheter in the urethra, and a tube in the suprapubic wound, according to the fancy of the operator. I am using a rather small suprapubic tube in these cases, but do not care to do away with it altogether with the memory fresh in my mind of the gentleman who so recently advocated complete suture of the bladder after suprapubic prostectomy and is reported to have returned home only to find that the heralded improvement had been discarded during his absence. The suture is divided and withdrawn from eighteen to twenty-four hours later. With this technic the immediate hemorrhage has been promptly checked, and the ultimate bleeding has been much less than it would otherwise have been. I have not seen any fistula or inflammatory complications along the track of the suture in the perineum.

109 East Thirty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. FRANCIS R. HAGNER, Washington: A little bag that I have devised does practically the same thing as Dr. Keyes' ingenious process. This bag has a string attached to one end, at the other a hollow rubber tube. A long curved sound is passed through the urethra, the tip of the rubber tube is pulled over the end of the sound, and the sound withdrawn, bringing with it the tube. The bag is now lying against the neck of the bladder, with a tube coming out through the urethra and a string through the suprapubic opening. The bag is inflated with a large syringe. The finger should be passed around the bag to see that the torn mucous membrane falls back into the cavity from which the prostate was removed. The bag is allowed to remain for from twenty-four to forty-eight hours, but is deflated at the end of twelve hours. To make the bag collapse perfectly it is necessary to use suction with the syringe. To remove it, the tube is cleansed as thoroughly as possible with soap and water and mercuric chlorid, and traction is made on the string while the tube is fed into the urethra. We have used this bag in eleven cases. There is practically no bleeding. If you wash out the bladder there will be just the slightest staining of the fluid. In one case the bag was not big enough. The first bag I had made was 11½ cm. in circumference. It will probably be necessary to have larger sizes, say, 13½ and 15½ cm. In the case in which bleeding occurred the internal sphincter did not contract down as it should. I remarked on it at the time. It is a very simple device. The patient is not uncomfortable; and the bag is removed without pain.

DR. CHARLES E. BARNETT, Fort Wayne: If the drainage were taken out within from twelve to twenty-four hours, there would be no danger; but if the drainage is kept *in situ* for a longer period than that it appears to me that there would be more danger from the means used to control hemorrhage than there would be had we not used any method of control, for should the drainage tube from its trauma loosen up a clot that had formed in the mouth of a vein there would be great danger from thrombi and emboli. The majority of men who are operating to-day pay no attention, particularly, to hemorrhage, unless the case is hemophiliac. The hemorrhage controls itself.

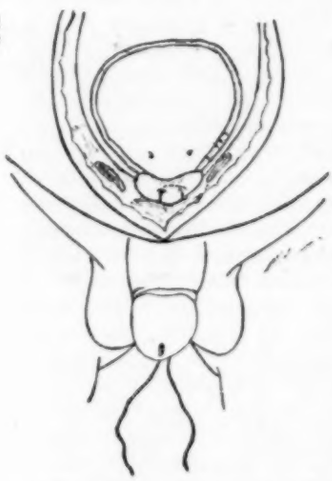

Fig. 7.—Showing the two ends of the suture entering through a single puncture of the perineum, passing through the deep urethra and to the bladder neck and catching the lower segment of the latter at its two angles. The traction on the ends of the loop pulls the bladder down into the urethra.

DR. E. L. KEYES, JR., New York: I respect Dr. Barnett's opinion, which is, however, contrary to my own. I consider that hemorrhage is dangerous in many cases; in certain cases, however, it is not dangerous. If we are to employ any technic for the control of hemorrhage, it is better for the sake of our own expertness and rapidity of action that we employ that technic in all cases. Neither in delay at the time of operation nor in complications have I felt that the technic I employ adds anything to the patient's danger.

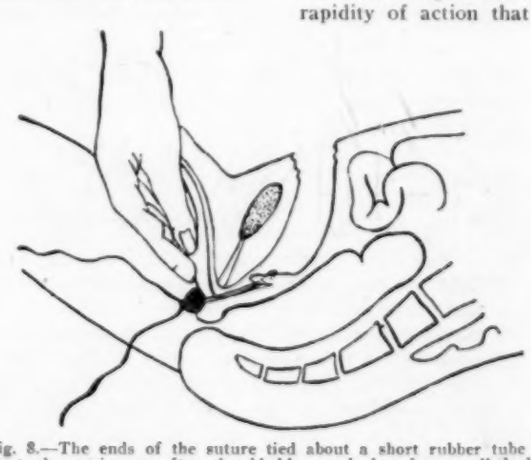

Fig. 8.—The ends of the suture tied about a short rubber tube laid against the perineum after the bladder neck has been pulled down firmly as shown in Figure 7.

THE TREATMENT OF HYDROCELE

WITH SPECIAL REFERENCE TO PHENOL INJECTIONS *

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Although a serous effusion into the sac of the tunica vaginalis occurs as an independent malady, in the vast majority of cases we find an underlying pathologic condition of one or more of the anatomic structures found in the scrotum. Hydrocele frequently accompanies the acute infections of the epididymis and testicle, but is more commonly found complicating the chronic infections of these organs, such as tuberculosis and syphilis. As a rule when the hydrocele is secondary to a tuberculosis of the epididymis, the tuberculous process is far advanced, having traveled down the cord, involving both the prostate and vesicles. In such cases it is my belief that an open operation is contra-indicated. Again, in those cases due to syphilis of the testicle, the removal or stitching of the sac behind the testicle is entirely unnecessary.

When the sac of the tunica vaginalis is well filled with fluid, it is often very difficult to palpate the contents of the scrotum. Therefore if we consider the conditions underlying hydrocele, namely, acute infections of the epididymis, such as gonococcus and pus infection (rarely colon), tuberculosis, neoplasms of both testicle and epididymis, syphilis of the testicle, also hydrocele resulting from traumatism of these organs, it is obvious that a preliminary tapping and evacuation of the sac is always indicated before choosing between the open operation and the injection of phenol (carbolic acid).

If preliminary tapping is practiced, it will prevent the too common error of opening the sac and finding an advanced tuberculous process behind the fluid. The same holds true in cases of syphilis of the testicle, in which, in all probability, there would be recovery with antisyphilitic treatment.

If I may be allowed to eliminate those effusions into the sac of the tunica vaginalis which accompany the acute infections of the epididymis and which usually disappear as the acute process subsides, it is my contention that the results following tapping and injection of phenol are as good as are seen following any of the open operations, provided the sac be thoroughly washed with sterile water after the serum has been evacuated and before the phenol is injected.

The common recurrences following the old method of injecting phenol without the preliminary washing out of the sac were due to the fact that the sac wall was covered with serum, which coagulated the phenol and did not allow the acid to come into contact with the sac wall. To obviate further such a contingency it has been my practice to test the return fluid for albumin and to continue the washing of the sac until the fluid fails to give a reaction to nitric acid. Then from 10 to 12 c.c. of 95 per cent. phenol are injected, the scrotum at the same time being manipulated so as to bring the acid into contact with all parts of the sac; then the excess is allowed to flow out, after which about 15 c.c. of alcohol are injected.

The injection of sterile water into the sac serves the double purpose of cleansing the sac wall and prevents the not infrequent accident of injecting the phenol into the tissues of the scrotum. During the emptying of a well-filled tunica vaginalis the receding sac wall is likely to draw away from the end of the cannula without the knowledge of the operator. If this does occur and the water is injected, it does not return, but remains in the tissues of the scrotum, which appear edematous. Under such circumstances the sac must be allowed again to fill with serum before an attempt is made to inject the phenol. The use of the Belfield hydrocele trochar and cannula, however, will practically always prevent this accident because it fixes the sac, by passing through two of its walls. The refilling of the sac which is commonly seen during the first twenty-four hours after the injection is due to the reaction of the tissue to the phenol and disappears spontaneously within a few days.

For the number of years that I have been practicing this method of washing the sac before injection I have observed very few recurrences. These few were in most instances due to a slight reaccumulation of serum, during the first week or two after the injection, and after a simple evacuation the cure was permament.

In cases of chronic pachyvaginalitis in which the sac wall has become greatly thickened, excision is preferable to either eversion or injection. As is sometimes supposed, injection of phenol is not followed by atrophy of the testicle, although it may rarely produce a peritesticular sclerosis.

As for the objections that might be advanced relative to the toxic effect of the phenol, I would say that neither in my own experience nor in the literature have such results obtained.

CONCLUSIONS

1. Considering the underlying pathology of many cases of hydrocele, it is my belief that open operation for the relief of this condition is usually unnecessary and frequently contra-indicated.
2. When the sac is thoroughly washed with sterile water before the phenol is injected, recurrences are very rare.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

ABSTRACT OF DISCUSSION

DR. A. A. MARTIN, New Zealand: Will Dr. Herbst say whether there is any pain after using this method?

DR. V. D. LESPINASSE, Chicago: I have often used phenol (carbolic acid). One of my early experiences was in a case of sloughing of the scrotum from carbolic acid, due to improper technic. That gave the method a sort of black eye in my own opinion. Later on I used the device of Dr. B. Einasson and somewhat simultaneously Dr. Belfield brought out his cannula. Since then I have used that with good results. Lately, instead of using phenol, after making the puncture and as the fluid is running out, I thread some chromic catgut into the sac. The catgut technic causes a little more pain the next day, but there is no chance of sloughing occurring.

DR. B. A. THOMAS, Philadelphia: It has been my experience that the injection of phenol is a useful procedure, in a large number of cases. I have noticed, however, that in not a few there has been a good deal of effusion as a result of the chemical reaction provoked in the tunica vaginalis, and in order to hasten convalescence I have resorted to secondary paracentesis. Has Dr. Herbst found it necessary to practice that supplementary procedure in the postoperative treatment of his cases?

DR. FRANK HINMAN, Baltimore: Has Dr. Herbst made any comparative studies with the use of phenol and the

formaldehyd solution or catgut methods? A number who have used equal parts of formaldehyd, glycerin and alcohol report better results than with phenol. We have treated a few patients at Johns Hopkins with formaldehyd and with the pushing in of catgut, and there has been, in all cases, a marked inflammatory reaction afterward. We have not used phenol.

DR. ROBERT H. HERBST, Chicago: Practically no pain follows the injection of phenol.

Concerning Dr. Lespinasse's trouble, I do not want to criticize his technic, but I imagine that he must have injected the acid into the dartos and not into the tunica vaginalis. I do not believe that sloughing could occur if the acid were injected into the tunica vaginalis.

DR. LESPINASSE: It was not my technic. The case was in the hospital when I went on duty.

DR. HERBST: I happened to have had this accident occur in my own work due to the slipping of the sac from the end of the cannula. If one injects the acid into the tissues outside of the tunica vaginalis one is likely to cause a sloughing of the scrotum. Answering Dr. Thomas, a short extract from my paper reads: "These few were in most instances due to a slight reaccumulation of serum during the first week or two after injection, and after a simple evacuation the cure was permanent." I have not had any experience with the injection of formaldehyd solution.

SONOROUS VIBRATIONS IN THE TREATMENT OF EAR-DISEASES*

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The treatment of ear-diseases with sonorous vibrations rests on the following principles:

The application of sonorous vibrations not too long continued and not too intense has a stimulating effect on the metabolism of all living cells. This action is a pneumovibratory massage. Applied to the ear it affects the external auditory canal directly, the tympanum through the membrana tympani, and the internal ear and cochlear nerve-system through the ossicles, oval window and, to a much less degree, through the tympanum and the round window.

All the structures of the auditory apparatus degenerate when insufficiently exercised; hence the necessity of intensive exercises when any of them are crippled.

Sonorous vibrations exercise the membrana tympani, the tympanic ossicles and muscles, the hair-cells of Corti's organ and membrana tectoria, and the entire cochlear nerve-system. Such exercise not carried to the point of fatigue increases the nutrition and efficiency of these structures.

The parts of the auditory apparatus or system, like those of other systems or organs of the body, are closely connected by the sympathetic. Metabolic changes in one part produce similar changes in allied parts. Thus, acute circulatory changes in the tympanic mucosa produce similar changes in that of the eustachian tube, and vice versa. This probably explains the improvement in the eustachian tube after treatment directed at the tympanum.

The Zünd-Burguet electrophone, which has been described in a previous paper,[1] was used in all the treatments and experiments enumerated herein. With this instrument siren-like scales may be produced in three timbers, corresponding to three registers of the human voice, low, medium and high. These registers may be lowered or raised, but they should be adjusted so that the scale of each overlaps that of the adjacent register. Each register has a scale of over an octave, and the sum of all the registers is a little less than five octaves, which is about the conversational range. If the harmonics and overtones produced are also considered, possibly the eleven octaves of human auditory perception are reached in the exercises. The latter consist in the production of scales in each of the registers, either applied to one ear at a time, or first to one ear and then to the other in each register, or as is usually done, alternately, first to one and then to the other ear while playing each scale in each register. Zünd-Burguet produces two scales, once in the low and once in the high register, and three times in the middle register at each treatment. Thus he starts in the middle register, proceeds to the low, then back to the middle, then up to the high and finally back to the middle register.

I complete the treatment by a short mechanical massage near and over the ear to overcome any slight numbness induced by the sonorous vibrations.

The intensity of the vibrations to each ear can be regulated, and also changed gradually or suddenly during the scales on each ear seriatim.

By this method, each note is produced for only a small fraction of a second (less than one-eighth of a second in the usual three-minute treatment), and each note is sounded at least twice for each ear.

The regulation of the intensities of the sounds used is exceedingly important. Zünd-Burguet as a general rule uses waves of not quite sufficient amplitude to cause a prickling sensation in the ear. There are many cases, however, in which no prickling sensation can be produced by the instrument used and yet the intensities of the sounds are sufficient to cause tinnitus and decreased audition. Therefore each case must be carefully studied and the intensities of the sounds graded to bring about the maximum improvement. To accomplish this in these cases, it is necessary to make tests before and after treatment for several days until the correct dosage is determined.

This brings up the subject of examinations.

The method pursued in chronic cases is to examine the ears at the start, and after fifteen, thirty, and fifty treatments.

In acute and subacute conditions, single tests may be necessary before and after treatment each time.

Thus the course and the frequency of treatments must be determined for each case, not always in advance.

Acute and subacute conditions require treatments once a day, while the chronic usually need two a day.

Good physical condition seems necessary for the most rapid improvement, especially when two treatments a day are given.

Negative results are liable to follow when the patient is in a continual state of exhaustion. This is one of the difficulties of the two treatments a day course. The pursuit of a vocation and the expenditure of the necessary energy for visits to the office twice a day sometimes prevent a successful outcome.

The usual course of treatment comprises fifty seances, two treatments a day. A second course of from twenty to thirty treatments is necessary in from six months to a year in the majority of cases of chronic deafness.

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* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Hubby, L. M.: Treatment of Deafness with Sonorous Vibrations by the Zünd-Burguet Method, New York Med. Rec., Jan. 31, 1914.

Some experiments were tried on the fairly normal ear to show the immediate effects of the treatment on audition.

A single distance test with a watch, an acoumeter, or similar instrument was made just before and immediately after a treatment on six individuals with the following results:

CASE 12.—Three cork acoumeter tests for each ear. The percentage of increase of audition distance varied from 1 to 45 per cent. The average was 21⅓ per cent.

CASE 43.—Three cork acoumeter tests for each ear. Increase of audition distance 3 to 49 per cent. Average increase 20.5 per cent.

CASE 28.—One watch experiment with one ear. Increase of audition distance 18 per cent.

CASE 39.—Six cord acoumeter experiments with one ear. Increase of audition distance from 3 to 43 per cent. Average increase 13⅓ per cent.

CASE 11.—Two acoumeter experiments for each ear. Increase of audition distance from 9 to 17 per cent. Average increase 14 per cent.

CASE 13.—One cork acoumeter experiment with each ear. Increase of audition distance 13 and 9 per cent. Average increase 11 per cent.

The average increase for the twenty-six experiments was 16.33 per cent.

A few observations were made to determine the length of time that a normal ear retained its improved audition after one treatment and it was found to be a little over a day.

Some tests were made on abnormal ears to find the immediate effects on hearing distance.

CASE 25.—A patient aged 60, suffering from otosclerosis with nerve atrophy. Right ear was tested three days with acoumeter, the left with cricket. Increase of audition distance from 4 to 47 per cent. Average increase 18⅓ per cent.

CASE 4.—Patient aged 33, with otosclerosis, OMCC residual, nerve atrophy. One experiment with cricket with each ear. Increase of audition distance, right ear 61 per cent., left ear 46 per cent. Average 53.5 per cent.

CASE 7.—Patient, aged 47, with otosclerosis and nerve atrophy. Cricket experiments on two days with both ears. Increase of audition distance from 3 to 22 per cent. Average 14.75 per cent.

The average increase for these three chronic cases was 28.9 per cent.

CASE 39.—OMCA in boy aged 16. Tests made on seven days. On the first day a watch was used, on the other days a cork acoumeter. Increase of audition distance from —3 to 59 per cent. Average 14 per cent.

CASE 28.—A man, aged 35, OMCA. Tests made on three days with watch showed increase of audition distance of 62, 60 and 13 per cent., or an average of 45 per cent.

SOME RESULTS IN CHRONIC PURULENT OTITIS

CASE 17.—Man, aged 27, OMPC left ear with small perforation in Shrapnell's membrane. Usual antiseptic cleansing methods of no avail after several months' trial. Perforation healed in two days after four treatments.

CASE 6.—Woman, aged 25, OMPC of both ears failed to dry after long course of treatment. Both ears dry after four days, eight treatments. She also had severe eczema of both canals which practically cleared up in two days.

CASE 24.—Man, aged 22, OMPC (R). Ear dry after three days.

CASE 8.—Boy, aged 5, OMPC (B), treated for over a year without success; both ears dry in five days' treatment, but the discharge returned with the next cold.

CASE 15.—Woman, aged 30, OMPC (L), dry after three treatments.

CASE 18.—Man, aged 22, OMPC and localized perilabyrinthitis in right ear. Dry after fifteen treatments.

CASE 21.—Man, aged 54, OMPC (B) with almost entire destruction of the drum and ossicles, and exposure of the internal carotid on the left side. Discharge reduced to a few drops in a few treatments, but the ears did not become dry after forty-nine treatments.

CASE 16.—Girl, aged 11, with radical mastoid wound following cholesteatoma, not healing in one spot after two months' treatment, became dry after fifty treatments.

Scanty dry ceruminous secretion causing itching of the external auditory canal was alleviated in at least one case of my series.

One bad case of eczema, associated with a moderate purulent discharge, was quickly relieved by the treatment.

Congestive, stenotic conditions of the eustachian tube were relieved in every instance in which the treatment was tried.

CASE 1.—Woman, aged 66. Four pounds' pressure required to open right tube, and 14 pounds for left tube, before treatment. After fifteen treatments, less than 3 pounds' pressure required. (Three pounds pressure is the lowest pressure registered with my apparatus.)

CASE 9.—Girl, aged 18. Left tube required 14 pounds' pressure to become patent, before treatment. After eighteen treatments the patency pressure needed was less than 3 pounds.

CASE 19.—Man, aged 23. Left tube required 10 pounds' pressure to become patent, before treatment. After fourteen treatments the patency pressure needed was less than 3 pounds.

CASE 33.—Woman, aged 25. Right tube required 15 pounds', left tube, 10 pounds' pressure to become patent, before treatment. After thirty treatments (no second test was made prior to this) the patency pressure needed was less than 3 pounds.

CASE 37.—Girl, aged 19. Both tubes required more than 15 pounds' pressure to make them open, before treatment. After fifteen treatments the patency pressure required was less than 3 pounds.

CASE 3.—Woman, aged 32. Right tube required 10 pounds' pressure to become patent before treatment. After fifteen treatments, less than 3 pounds was required.

CASE 18.—Man, aged 22. Left tube required more than 15 pounds' pressure to make it patent before treatment. After thirty treatments 9 pounds' pressure was required, and after fifty treatments less than 3 pounds' pressure was required.

CASE 17.—Man, aged 27. Left tube required more than 15 pounds to make it open before treatment; after fifteen treatments still not less than 15 pounds, but after thirty treatments less than 3 pounds were required.

Thus in the eight cases, four were relieved within fifteen treatments, one in eighteen, two in thirty, and one in fifty treatments.

TWO CASES OF ACUTE CATARRHAL OTITIS

CASE 39.—Boy, aged 16. Severe OMCA (B). The first few days inflations were beneficial for the right ear, but there was decreased audition in the left. Sonorous vibrations improved the hearing rapidly. Hearing was normal in one week on both sides.

CASE 28.—Man, aged 35. Severe OMCA (R). Audition was decreased by the mildest inflation, but attack was overcome by daily treatment with the sonorous vibrations for four days.

In the table are shown the audition tests at the first examination and the morning following the last treatment with sonorous vibrations in thirty-two consecutive cases of chronic deafness.

AUDITION TESTS AT FIRST EXAMINATION AND MORNING FOLLOWING

Lesions	Number of Case	Treatments Given	Ear Treated	Voice		Loud Whisper		Watch		Acoumeter	
				Before	After	Before	After	Before	After	Before	After
OMCC	17	49	R	L 15+	L 15+	15+	15+	S .89	S .72	11.88	11.85
OMPC			L	L 15+	L 15+	7.42	15+	S .06	S .12	.19	.62
OMCC	15	50	R	L 15+	L 15+	15+	15+	S .72	S .83	8.03	15+
OMPC			L	L 15+	L 11	8.52	15+	S .17	S .50	.57	6.55
OMPC, Otosclerosis	21	49	R	L 15+	L 15+	8.12	15+	S .005 L .64	S .175 L .85	.60	.35
OMPC, Otosclerosis		"	L	L 15+	L 15+	6.66	10	S .0025 L .215	S .06 L .37	.305	.58
OMPC	24	49	R	L 15+	L 15+	15+	15+	S .13	S 1.32	.54	6.10
Otosclerosis			L	L 15+	L 15+	15+	15+	S .18	S 1.04	1.82	5.50
OMPC, eczema	6	51	R	L 15	L 15+	3	15+	S .07 M .09	S .52 M .95	.44	3.33
OMPC, nerve atrophy, eczema			L	L 10.43	L 10.04	.83	.75	L .02	L .08	.01	.105
OMPC, localized perilabyrinthitis	18	50	R	L 15+	L 15+	7.98	10	S .005 L .21	S 02 L .46	.76	.53
OMCC			L	L 15+	L 15+	9.04	14.47	S .04	S .09	.26	.30
Otosclerosis	2	15	R	L 7.68	L 10.55	.415	.58	L .15	L .33	.....	.....
Otosclerosis			L	L 15+	L 15+	15.	15+	S .33	S .21	.....	.....
Otosclerosis	23	50	R	L 15+	L 15+	10.3	12.04	S .105 L .31	S .13 L .57	.20	.235
Otosclerosis			L	L 10	L 11.115	1.72	1.59	S + C L .01	S .005 L .04	.01	.032
Otosclerosis	32	50	R	L 15+	L 15+	15+	15+	S .12 L .92	S .125 L .78	1.18	2.04
Otosclerosis			L	L 15+	L 15+	15+	15+	S .145 L 1.92	S .17 L 2.20	5.09	4.95
Otosclerosis, OMCC (residual) nerve atrophy	4	48	R	L 5.97	L 15+	.155	1.51	L — C	.....	—	.....
Otosclerosis, OMCC (residual) nerve atrophy			L	L .175	L .69	—	.215	L — C	.....	—	.....
Otosclerosis, nerve atrophy‡	10	49	R	L 14.9	L 15+	1.07	8.65	M .01? L + C	L .06	.016	.10
Otosclerosis, nerve atrophy‡			L	L 15+	L 15+	.77	2.22	L .01 M + C	L + C	.03	.015
Otosclerosis, nerve atrophy§	1	30	R	L 3.97	L 7.16	.23	.65	L .005		.01	.044
Otosclerosis, nerve atrophy§			L	L .88	L 4.41	.15	.40	L + C	.....	—	—
Otosclerosis, nerve atrophy	40	15	R	C 4.64	C 6.45	4.90	7.36		S + C	.97	.10
Otosclerosis, nerve atrophy			L	C 4.24	C 5.88	2.23	7.21	L .105 L + C	L .14 L + C	.01	.03
Otosclerosis, nerve atrophy	33	48	R	C 7.95	C 6.42	5.09	11.75	S .005 L .05	S .045 L .255	.035	.095
Otosclerosis, nerve atrophy			L	C .32	C 2.58	3.23	7.21	L + C	S + C	.03	.105
Otosclerosis, nerve atrophy; heredit. syphilis	37	49	R	C .93	C 1.32	4.29	11.63	S + C	L .12 S .05	.30	.38
Otosclerosis, nerve atrophy; heredit. syphilis			L	C 2.15	C 1.94	8.23	11.77	L .115 S .005 L .295	L .60 S .055 L .385	.43	.38
Otosclerosis, nerve atrophy	25	17	R	L 15+	L 15+	15+	15+	S .32	S .38	.98	1.41
Otosclerosis, nerve atrophy			L	L 15+	L 15+	9	11.75	L — C	L — C	.....	.04
Otosclerosis, nerve atrophy¶	29	30	R	C 5.97	C 7.27	12.25	15+	S .095 L .03	S .009 L .05	.19	.21
Otosclerosis, nerve atrophy			L	C 2.45	C 3.95	1.90	8.03	S + C L .01	S + C L .017	.03	.08
Otosclerosis, nerve atrophy	3	49	R	L 15+	L 15+	1.86	7.78	S .04	S .09	.....	.....
Otosclerosis, nerve atrophy			L	L 15+	L 15+	15+	15+	S .49	S .58	.....	.....
Otosclerosis, nerve atrophy	14	48	R	L 3.68	L 15+	.005	.50	L — C	.....	—	.....
Otosclerosis, nerve atrophy			L	L 2.29	L 15+	.005	.50	L — C	.....	—	.....
Otosclerosis, nerve atrophy‖	35	42	R	C 1.30	C 2.11	3.61	9.50	S + C L .235	S .02 L .33	.37	.62
Otosclerosis, nerve atrophy			L	C 1.53	C .92	2.40	8.64	S + C L .17	S .005 L .18	.087	.....
Otosclerosis, nerve atrophy	41	30	R	C .47	C 1.20	2.95	6.70	S + C L .115	S + C L .145	.05	.07
Otosclerosis, nerve atrophy			L	C .67	C 1.12	1.38	4.24	L .08	L .135	.035	.035
Otosclerosis, nerve atrophy	38	30	R	C .92	C 2.41	8.10	13.91	S + C L .045	S .015 L .045	.055	.09
Otosclerosis, nerve atrophy			L	C 1.12	C 2.89	11.83	13.53	S .025 L .545	S .05? L .86	.19	.19
Otosclerosis, nerve atrophy	36	31	R	L 10	L 15+	15+	15+	S .087	S .135	.68	.64
Otosclerosis, nerve atrophy			L	C .70	C 1.59	7.03	11.82	S .047 L .265	S .035 L .285	.175	.195
Otosclerosis, nerve atrophy	7	50	R	L 6.67	L 15+	.265	1.97	L — C	.....	—	.....
Otosclerosis, nerve atrophy			L	L 6.36	L 15	.21	.88	L + C	.....	—	.....
Nerve atrophy	9	50	R	L 15+	L 15+	15+	15+	S .16 M 1.16	S 1.75 M 2.25	.....	.....
Nerve atrophy			L	L 15+	L 15+	15+	15+	S .118 M .74	S 1.56 M 2.21	.....	.....
Nerve atrophy	26	50	R	L 15+	L 15+	8.42	10	S + C L .05	S + C L .14	.085	1.11
Nerve atrophy			L	L 15+	L 15+	15	15+	S .005 L .05	S + C L .085	.08	.262
Nerve atrophy	19	50	R	L 15+	L 15+	15+	15+	S .005 L .155	S .025 L .14	.21	.205
Nerve atrophy, OMCC			L	L 1.60	L 2.61	6.90	6.02	L — C	L — C	—	—
Nerve atrophy	31	30	R	L 15+	L 15+	15+	15+	S .165	S .47	.56	1.35
Nerve atrophy			L	L 15+	L 15+	15+	15+	S .34	S .68	4.40	9.25
Nerve atrophy**	42	15	R	C 15+	C 15+	15+	15+	S .95	S 1.54	13.46	15+
Nerve atrophy			L	C 15+	C 15+	15+	15+	S .73	S 1.71	12.73	15+
Nerve atrophy; otosclerosis	5	16	R	L 1.7	L 2.83	.27	.495	L .005	L .025	.005	.0175
Nerve atrophy			L	L 10.85	L 12.58	1.52	2.15	S + C L .19	L .243	.....	.....
Nerve atrophy, senile	27	50	R	L 15+	L 15+	15	15+	S .05 L .17	S .07 L .425	.17	.273
Nerve atrophy, "			L	L 15+	L 15+	15+	15+	S .05 L .24	S .097 L .74	.14	.43
Nerve atrophy, senile	30	25	R	L 15+	L 15+	15+	15+	S .17	S .165	9.20?	9.40
Nerve atrophy, "			L	L 15+	L 15+	15+	15+	S 1.24	S 1.89	8.56	9.61

In this table L indicates loud, C conversational, M medium, and S soft. * At first test did not use lower than 26. † Old C_4 fork broke, so ¶ Last fifteen treatments given irregularly on account of general fatigue. ‖ C_4 in second test shorter sounding than in first test.

LAST TREATMENT IN THIRTY-TWO CASES OF CHRONIC DEAFNESS

Cricket		High (Air)		High (Bone)		Low (Air)		Low (Bone)		C (Air) (Seconds)		C (Bone) (Seconds)		C_4 (Air) (Seconds)		C_4 (Bone) (Seconds)		Gellé C.mm. Hg	
Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
.....	.....	19,000	.....	17,000	.....	26	26	26	26	62	79	37	33	27	23	18	14	40?	—
.....	.....	14,000	.....	17,000	.....	128	128	26	26	40	38	35	38	24	16	14	15	40?	—
.....	.....	17,000	19,000	19,000	.....	26	26	26	26	81	95	60	44	16	30	10	12	20	10
.....	.....	16,000	14,750	20,000	.....	128	26	26	26	41	67	41.5	47	18	25	12	15	—	10
15+	15+	12,000	12,500	17,500	18,000	256	90	26	26	0	12	32	46	16	16	10	14	—	..
15+	15+	13,500	13,750	20,000	21,000	128	55	26	26	20	22	30	40	20	19	10	12	?	..
.....	.....	15,500?	14,500	15,500	16,500	128	55	26	26	43	64	47	38	15	24	12	19	?	+
.....	.....	13,000	15,750	15,500	16,750	128	55	26	26	45	50	47	45	25	28	20	19	—	+
.....	.....	15,000	.....	21,000	.....	128	26	26	26	46	40	49	51	20	21	11	18	?	..
11.80	15+	14,000	.....	22,000	.....	256	256	26	26	0	0	36	30	14	14	9	15	—	..
.....	.....	15,600	.....	19,000	.....	128	.....	26	..	16	30	50	66	19	20	18	16	?	..
.....	.....	16,000	.....	20,000	.....	128	.....	26	..	23	28	45	49	18	16	13	15	100?	..
.....	.....	16,000	.....	19,000	.....	512	.....	..	..	0	..	40	..	15	..	14	..	—	..
.....	.....	15,300	.....	19,000	.....	128	.....	..	..	45	..	36	..	22	..	14	..	—	..
15+	.....	16,000	16,000	25,000	25,000	128	.....	26	..	0	40	33	33	18	15†	20	20†	—	..
15+	.....	13,500	13,600	23,000	23,000	256	.....	26	..	0	0	33	35	15	14†	18	13†	—	..
.....	.....	14,750	14,950	19,000	.....	55	45	26	26	47	48	45	45	15	21	19	9	—	—
.....	.....	16,250	16,250	19,000	.....	55	26	26	26	50	43	40	45	20	18	15	8	—	—
2.36	4.70	11,000	.....	13,000	.....	128	.....	26	..	24	17	53	38	12	12	8	9	?	..
.09	.10	12,250	.....	20,000	.....	256	.....	26	..	14	17	38	37	7	9	6	7	—	..
15+	15+	13,250	10,950	22,000	.....	64	26	26	..	42	57	37	34	17	16	8	8	?	..
15+	15+	13,000	14,500	23,500	.....	64	40	26	..	50	45	27	34	16	16	10	8	—	..
15+	15+	12,500	.....	19,000	.....	128	.....	26	..	0	..	40	..	15	..	9	..	—	..
7.79	8.60	9,000	.....	20,000	.....	256	.....	26	..	0	..	40	..	10	..	8	..	—	..
15+	15+	10,600	10,800	21,000	.....	90	26	26	26	13	25	34	47	9	21	13	15	—	..
15+	15+	10,400	10,800	19,500	.....	30	26	26	26	36	45	36	42	10	11	7	12	—	..
15+	15+	9,250	10,000	15,000	17,250	65	55	26	26	22	32	41	49	16	18	15	16	—	—
9.57	15+	7,900	8,900	16,000	17,400	90	55	26	26	18	25	38	43	16	18	13	17	—	—
15+	15+	15,950	16,000	19,000	.....	512	120	26	26	0	7	26	52	12	20	9	11	—	—
15+	15+	15,900	16,250	20,000	.....	90	57.5	26	26	18	25	30	42	9	19	8	13	—	—
.....	.....	14,000	.....	15,500	.....	50	.....	50	..	61	60	45	24	20	20	19	18	160	..
.....	.....	8,800	.....	15,500	.....	50	.....	50	..	36	30	30	25	14	14	13	11	—	..
15+	15+	11,000	14,500	19,500	.....	55	45	26	..	37	46	38	49	20	20	7	8	—	—
15+	15+	9,125	12,400	20,500	.....	55	55	26	..	19	28	37	41	13	16	7	11	—	—
.....	.....	17,000	.....	20,500	.....	128	.....	26	..	9	16	26	28	14	16	13	18	—	..
.....	.....	18,000	.....	21,000	.....	26	.....	26	..	81	70	29	27	20	19	14	14	—	..
.81	.94	2,048	.....	21,000	.....	256	.....	26	..	0	16	44	47	15	15	10	10	—	—
.82	1.03	2,048	.....	19,000	.....	256	.....	26	..	0	1	45	28	11	14	10	11	—	—
15+	.....	16,000	16,250	19,000	.....	90	70	26	..	20	..	50	40	14	11	17	8	—	..
15+	.....	15,000	15,500	19,000	.....	90	70	26	..	0?	10	37	50	15	14	16	9	—	..
15+	15+	13,500	13,500	21,000	.....	512	256	26	..	0	0	25	25	12	15	9	13	—	..
15+	15+	9,300	9,300	19,000	.....	512	256	26	..	0	0	21	20	14	16	8	11	—	..
15+	.....	11,250	12,400	22,500	.....	55	26	26	..	24	35	45	44	15	21	7	13	—	—
15+	.....	15,750	15,800	24,500	.....	55	26	26	..	25	24	30	35	13	19	13	11	—	—
15+	.....	13,700	15,000	19,500	.....	90	26	26	..	23	35	44	45	11	20	9	15	—	..
15+	.....	14,600	14,900	20,000	.....	90	50	26	..	15	22	45	50	11	16	10	10	—	..
13.23	15+	13,000	.....	21,000	.....	256	.....	26	..	0	0	25	30	14	16	15	20	—	—
9.94	15+	12,250	.....	22,000	.....	512	.....	26	..	0	0	40	41	12	16	15	16	—	—
.....	.....	18,000	.....	20,000	.....	26	.....	26	..	48	67	25	37	15	29	10	20	+?	?
.....	.....	18,000	.....	19,000	.....	26	.....	26	..	41	69	15	37	14	29	10	21	+?	?
9.70	9.35	1,750	2,069	14,000	.....	26	.....	26	..	50	88	25	28	10	10	6	7	10	..
9.32	15+	1,750	2,461	15,500	.....	26	.....	26	..	64	87	24	30	12	14	7	7	10	..
15+	15+	15,000	.....	18,000	.....	26	.....	26	..	56	55	16	18	22	18	8	11	?	—
6.70	12.34	12,000	.....	20,000	.....	128	.....	26	..	10	10	15	13	9	11	8	10	?	—
15+	.....	12,500	12,750	15,500	15,750	55	26	26	26	35	67	17	21	15	20	13	13	10	..
15+	.....	18,000	14,750	19,000	17,500	26	26	26	26	45	63	18	21	15	18	13	13	10	..
.....	.....	17,500	18,000	19,000	.....	26	16*	26	16*	70	68	48	40	19	17	13	14	10	10
.....	.....	16,500	16,600	20,000	.....	26	16*	26	16*	82	78	30	34	26	27	14	15	15	10
.....	.....	9,000	20,000	17,000	19,000	128	.....	128	..	25	23	18	20	14	12	7	8	—	..
.....	.....	20,000	20,000	21,000	19,000	64	.....	64	..	40	40	28	14	16	13	7	7	+	..
15+	.....	12,000	12,300	20,000	20,000	26	.....	26	..	68	65	28	30	20	21	10	10	—	—
15+	.....	13,000	14,800	21,000	20,000	26	.....	26	..	65	75	40	40	18	20	9	13	—	—
.....	.....	14,250	.....	16,000	.....	26	.....	26	..	73	77	25	32	17	18	17	12	?	..
.....	.....	14,500	.....	17,500	.....	26	.....	26	..	65	75	25	32	17	23	16	12	?	..

used new one, which was a few seconds shorter. ‡ April 27 (later date) Gellé negative (B). § May 7 (later date) Gellé negative (B).

SUMMARY OF RESULTS

The results are thus roughly summarized:

Two cases of OMPC, audition distance tripled.

Two cases of OMPC with otosclerosis: Audition distance in one increased ten times; audition distance in the other increased 50 per cent.

One case of OMPC with nerve atrophy. Audition distance on one side increased over seven times and on the other side, four times.

One case of OMPC with localized perilabyrinthitis: Audition distance more than doubled.

Three cases of otosclerosis: Very slight improvement, less than 50 per cent.

Fifteen cases of otosclerosis with nerve atrophy: Five cases had audition distance more than doubled. Five had audition distance doubled or increased more than 50 per cent. Five cases had audition distance increased only slightly.

Eight cases of nerve atrophy: One had audition distance increased about ten times. Five had audition distance doubled. One had audition distance increased 50 per cent. One had audition distance increased only slightly.

High tone limit by air conduction was raised in twenty-five ears, remained stationary in five, and was lowered in four ears.

High tone limit by bone conduction was raised in eight ears, remained stationary in three and was lowered in three ears.

Lower tone limit by air conduction was lowered in twenty-seven ears and remained stationary in seven ears. Some of the latter might have been found lowered if they had been tested with a longer series of forks.

In only two cases of the series was any improvement indicated in ossicular rigidity by Gelle's test. One, Case 15, was an OMCC on one side and an OMPC on the other.

The other, Case 42, was a case of nerve atrophy.

These tests were made with a manometer, the amount of pressure necessary to affect the hearing for the C fork being noted.

Tinnitus was removed in nine cases, improved in twelve and in six there was no change.

Paresthesia, neuralgic otalgia, otitic cephalgia and sense of fulness in ears were removed in sixteen cases, improved in four and no change in one case.

The principal contra-indications for the treatment are acute purulent conditions of the tympanum, all acute conditions of the internal ear, great fatigue of the nervous system, and absolute nerve deafness.

The number of observations and tests enumerated in this paper are too small to permit the making of any sweeping generalizations, but are sufficient to show the usefulness of the treatment in many cases of acute and chronic conditions of the ears.

27 West Sixty-Eighth Street.

ABSTRACT OF DISCUSSION

Dr. Walter A. Wells, Washington, D. C.: In considering the effect of sonorous vibrations on the ear, some peculiarities of the ear as a sense-organ must be borne in mind. The auditory apparatus, which originated probably as a protective apparatus, is constantly on guard. The last of the sense-organs to go to sleep, it is the first to awake, and during waking hours, it has, apparently, no repose. Every one lives in a sonorous environment and must therefore have his auditory nerves constantly bombarded by vibrations of sound of every conceivable variety of pitch, quality and intensity. One may rest his eyes now and then by the simple, voluntary process of closing the lids. Hearing, however, is an involuntary function except so far as we may, by different degrees of attention, inhibit cortical perception. One inference from this is that an organ destined by nature to such increasing activities must suffer when it is deprived, as it is in deafness, of its accustomed stimuli of sonorous vibrations. It might also be inferred that an organ so constituted must be quite proof against fatigue and strain. The first inference I believe is a correct one, that a deaf ear suffers from a want of proper sound-stimuli, but, unfortunately, the second is not quite true, and therein comes the limitation of the therapeutic use of sound. I have not made use of acoustic exercises for the betterment of hearing, but I have endeavored to ascertain, in some measure, the behavior of the normal ear when exposed to sounds of different pitch, duration and intensity, hoping thereby to establish some of the laws of auditory fatigue, and I believe that a knowledge of the laws of auditory fatigue, as produced by sound, is an absolute preliminary requisite to the use of sound for therapeutic purposes. I first ascertained the exact electrical energy necessary to awaken a sensation of sound of a given pitch. This, which we call the threshold of excitation, is equivalent to the individual measurement of hearing for that sound. I then exposed this ear to electrically produced sounds of a selected pitch and a certain duration, and then, without loss of time, again tested the electrical energy necessary to awaken perception for the original note. Fatigue of hearing was clearly proved, though it was surprising how quickly it was recovered from. It was particularly marked for the higher notes of the scale. I employed only musical notes and continued them for comparatively short periods. Some who have experimented on animals, however, have proved that if we use very shrill disagreeable notes, for many hours continuously, we can actually produce degeneration in the nerve-cell, localized in the cochlea. In using acoustic exercises the greatest caution is necessary in order not to exceed the limit of auditory endurance as shown by the subjective sensation of the patient, and the evidences of fatigue as manifest by loss of function. The subjective sensation may be manifested by a generally disagreeable sense of irritability, a feeling of numbness and some form of tinnitus. The loss of function is ascertained by frequent, accurate functional tests.

The results reported by Dr. Hubby show that effects can be obtained, but I believe that he will agree that extreme caution must be observed in using sounds of the right quality, intensity and duration, and also discrimination in the choice of cases for this method of treatment.

Dr. L. M. Hubby, New York: It is, of course, very important to study each individual to see how he responds to the sonorous vibrations and then to give the proper length and strength of treatment. If Schambaugh's theory of auditory perception is correct, it would explain the good results obtained with this instrument rather than with those that have very few notes. The shortness of exposure to each note at a time and the covering of the entire scale within the limits of the instrument stimulate each corresponding part of the tectorial membrane with its adjacent hair cells without the production of fatigue.

Public Health and Good Roads.—In our largest cities to-day the economic health is directly dependent upon good transportation. More children die annually because of poor milk in the summer season than probably from any other cause. Fresh milk cannot be supplied to the children because of poor transportation facilities. It is true that a large part of this transportation is conducted by railroads; but a large part of this is also conducted by wagon roads. Transportation must be of the very best kind in order to bring fresh milk into our large cities. This in a measure also holds true for the smaller cities.—William De Kleine, *Public Health*, published by Michigan State Board of Health.

THE ETIOLOGY OF SPLENIC ANEMIA OR BANTI'S DISEASE

PRELIMINARY NOTE *

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Pure cultures of diphtheroid organisms apparently identical with or closely related to the *Bacillus hodgkini* have recently been obtained by us from two spleens removed surgically in the treatment of splenic anemia.

Case 1 was under the care of Dr. J. J. Bellin of Green Bay, Wis., who kindly submitted blood-smears for examination before operation and sent the spleen immediately after its removal. The spleen was carefully sterilized externally by boiling before cultures were made from its interior.

Case 2 was a patient in the Milwaukee County Hospital, where the blood was studied before and after splenectomy and where part of the bacteriologic and experimental observations were made.

Histologic studies of the two spleens confirmed the clinical diagnosis of splenic anemia or the early stage of Banti's disease. Inoculation of dogs and rabbits was made with cultures of the organism obtained from Case 2 and with a culture obtained from a lymph-gland of a case of Hodgkin's disease, in which the diagnosis had been confirmed histologically and hematologically. In each case there were produced changes that were characteristic of the disease as described by Banti. These experiments were conducted independently at the pathologic laboratories of the University of Wisconsin and of the Milwaukee County Hospital and the results compared later.

These findings appear significant in view of the results of A. G. Gibbons,[1] who found in stained sections of six cases of splenomegaly Gram-staining streptotrichal organisms, at times segmented and at times appearing as bacillary forms.

The following clinical evidence seems confirmatory of the importance of the observations cited:

Atrophic cirrhosis of the liver, as a complication of the more usually accepted glandular variety of Hodgkin's disease, has been observed repeatedly, but is infrequent. Earlier stages of a periportal connective tissue overgrowth have, however, been noted comparatively often in the more chronic cases. This rarity of advanced cirrhosis in Hodgkin's disease is probably due, as Klein[2] has suggested, to the fact that life is, as a rule, insufficiently prolonged. In anemia splenica (Banti's disease) the first stage usually lasts from three to five years, a period quite in excess of the average duration of life in anemia lymphatica (Hodgkin's disease). This difference in duration, and in addition the relatively greater concentration of toxins in the portal circulation in Banti's disease, may explain why a Laënnec's cirrhosis is the constant terminal feature in the latter condition.

In the clinical course of splenic anemia as described by Banti[3] there is the characteristic alternation of periods of progression and remission which one of us[4] has described as so constantly present in Hodgkin's disease and has attributed to variations in the degrees of toxemia. There is the striking difference of greater chronicity in the former condition. Moreover, in splenic anemia recurrent fever has been noted which may correspond quite exactly with the febrile state first described by Murchison, but commonly designated as Pel-Ebstein.

Banti recognized that splenic anemia might be accompanied by lymph-gland enlargement in later stages and that the changes in the spleen in this affection and in pseudoleukemia-splenolymphatica were similar, wherefore he thought it possible to regard "anemia splenica as a pure form of pseudoleukemia splenica." In other words, Banti's disease might be Hodgkin's disease of the spleen.

The foregoing bacteriologic, histologic, hematologic and clinical evidence seems to warrant the conclusion that splenic anemia or Banti's disease and Hodgkin's disease are closely related, if not only variations in manifestation of a single type of infection.

* From the Pathological Laboratories of the University of Wisconsin and of the Milwaukee County Hospital.

1. Gibbons, A. G.: Quart. Jour. Med., January, 1914, p. 153. Streptotrichal Organisms in the Spleen in Certain Cases of Splenomegaly, Current Comment, THE JOURNAL A. M. A., May 23, 1914, p. 1664.
2. Klein: Berl. klin. Wchnschr., 1890, xxvii, 712.
3. Banti: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's), 1898, xxiv, 21.
4. Yates: Bull. Johns Hopkins Hosp., 1914, xxv, 180.

THE USE OF ANTISTREPTOCOCCUS SERUM IN CHRONIC ARTHRITIS *

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An extensive literature bears witness of the attempts which have been made in the past few years to make some use of passive immunization by means of antiserums against various forms of streptococcus infection. The serums prepared by Marmorek, Aronson, Moser and Menzer were perhaps given the most exhaustive trials. It appears that only a moderate and only a variable degree of success has been attained as compared with some of the effective immune serums, and it seems probable that some of the factors in the production or transfer of the immune bodies are at fault. The causes of this discrepancy have been sought in various parts of the immunizing process such as a lack of specificity in the organism used, the absence of polyvalence, insufficient dosage, and the apparently demonstrated fact that the streptococcus develops no true antitoxin, so that any immunity must be entirely phagocytic and would require frequent renewal of the specific opsonins in the immune serum to produce any permanent effect.

In view of the recent investigations which seemed to indicate that the streptococcus was a common agent in the production of the chronic as well as the acute forms of arthritis,[1] it was thought that possibly some of the defects of former serum treatment might be avoided and a serum produced which would be of benefit in some of the intractable cases of chronic joint disease. The serum used was a polyvalent horse serum prepared by Drs. Gatewood and Moore[2] work-

* This work was carried on under the Dane Billings Fellowship and in the laboratories of the Otho S. A. Sprague Memorial Institute.

1. Beattie: Jour. Path. and Bacteriol., 1904, ix, 272. Davis, D. J.: Chronic Streptococcus Arthritis, THE JOURNAL A. M. A., Sept. 6, 1913, p. 724. Billings, Frank: Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med., April, 1912, p. 484; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, THE JOURNAL A. M. A., Sept. 12, 1913, p. 819.
2. Heinemann and Gatewood: Jour. Infect. Dis., 1912, x, 416.

ing in the Otho S. A. Sprague Institute, the immunizing organisms consisting of from twenty-five to thirty strains of streptococci which had been isolated from the enucleated tonsils or the joint fluid of arthritis patients. The first portion of the serum used was not refined or heated. As toxic effects were observed following its use, an effort was made to lessen them by heating to 50 C. for ten hours and the serum was concentrated by a modified Banzhaf method[2] in order that the mass of each injection might be lessened. The original unheated serums were used in doses of from 20 to 30 c.c., and in a number of instances small preliminary injections of 1 or 2 c.c. were made from two to twenty-four hours before the large injection in the hope of avoiding allergic reactions by the production of a temporary refractory condition to anaphylaxis. This method did not appear to be successful in avoiding toxic symptoms; and, after several trials, a succession of gradually increasing frequent doses of 2, 6, 8, 10 and 12 c.c. was adopted as more likely to avoid dangerous sensitization. The maximum dose of the concentrated serum was not more than 12 c.c. since the viscosity of the serum prevented its rapid spread through the subcutaneous tissue and the use of larger amounts caused excessive pain.

The serum was usually administered subcutaneously, in the interscapular region, a needle of rather large caliber being used. On three occasions the injection was made into the knee-joint after the withdrawal of fluid. In the subcutaneous injections every effort was made to avoid accidental intravenous injection. The needle was always withdrawn a short distance from its extreme insertion and suction made with the piston to determine if the point was in the lumen of a vein. The possibility, however, of tearing a vein with the broad point of the needle and of forcing in small amounts of the serum under the strong pressure necessary for the injection cannot be denied. The patients treated with the serum, twenty in number, were all in the Presbyterian Hospital on the service of Dr. Frank Billings and to a large extent in the beds maintained by the Sprague Memorial Institute. They received in conjunction with the serum the benefit of all possible measures for the relief of their symptoms, such as the removal of apparent foci of infection, complete rest in bed, a carefully regulated and nourishing diet, massage, streptococcic vaccines, the application of casts and braces, and an improvement of their mental attitude toward the disease. In all of the cases the disease was polyarticular, and all evidences seemed to indicate that the streptococcus was the infecting agent. The duration of the arthritis varied from one to fifteen years, the average being about five years. The youngest patient was 22 and oldest 56, seven of the twenty being under 30 and seven over 45. None gave a history of asthma or hay fever and none had received any previous injection of horse serum.

In every case, vaccines were used in conjunction with the serum, and whenever possible they were autogenous, from organisms isolated from foci of infection which seemed probable sources of the systemic disease. Most commonly they were from the excised tonsil, infected sinuses of the head, or alveolar abscesses and pockets of peridental pus, and consisted of streptococci in a mixture of the hemolytic and the viridans varieties with small proportions of pneumococci, staphylococci and Friedländer bacilli. The vaccines were prepared in the usual manner and given in doses of from 50 to 200 millions at six or eight day intervals. They were usually given from twenty-four to thirty-six hours previous to the serum injections in the effort to have the serum present during the rising stage of the opsonins. In four of the cases extremely large doses, from 3 to 4 billions, were given for a short time, but no added beneficial result was observed.

The immediate results of the serum injections consisted of a sharp rise in the specific streptococcic opsonins and the clinical manifestations of serum sickness. At no time was there observed any especial relief from the pain and disability with which the patients suffered. The opsonins, especially with the first few large injections, rose rapidly to 1.5 to 2, and declined only after two or three days, usually never reaching the original level. After repeated injections, and especially with the smaller doses of serum, the rise was more gradual and steady. In every case the opsonins were maintained above the normal control by the combination of serum and vaccine. The phagocytic index was recorded and varied directly with the opsonins, although the variations were always less extensive. A slight rise in the number of leukocytes was observed in all cases in which the count was made following a serum injection, the highest number being 12,400.

Serum sickness, consisting of various degrees of headache, nausea, rise in temperature, aching of joints, and urticaria, was observed in eighteen of the twenty patients receiving the serum. The chief discomfort arose from the urticaria, which was very severe at times and recurred in some cases after each of the first three or four injections. Five of the patients developed rather marked symptoms of anaphylactic shock and in four cases it was so severe as to appear dangerous to life. The symptoms appeared in all cases within from one-half to three minutes after the subcutaneous injection, varying greatly in degree, the most constant ones being tingling and burning sensations in the face and hands, dyspnea with cyanosis, nausea and extreme weakness. In the more severe attacks, dyspnea and dysphagia were very marked and the pulse very weak and irregular. The duration of the acute attack was usually not more than three or four minutes, but in one instance the symptoms recurred in three lessening waves during a period of thirty minutes. This patient suffered the most severe shock, and during the first attack the respirations and pulse were entirely absent for a short period.

The hypodermic administration of epinephrin and the use of ammonia or some other stimulant was followed in the other cases by a speedy recovery. Morphin and atropin were also used with an apparently favorable action. Following the attacks, the patients complained chiefly of general malaise, and weakness, often with a severe headache. In one case an estimation of the opsonins was made with serum taken immediately after the shock, and a very low stage recorded. Reasoning from this observation, Dr. J. H. McClellan, who was assisting in the work, attempted to discover some constant relationship between a declining stage of opsonin and the occurrence of anaphylactic symptoms. It appeared after some observation that the injections given during a prolonged negative phase were more frequently followed by shock, and an effort was made in the later work to avoid this coincidence.

The anaphylactic symptoms occurred in four of these five cases and appeared to increase in violence. They did not appear with each injection but at intervals and never with the first injection. Among the five cases, it appeared first after the seventh, third, sixth, third, and seventh injections, the time which had elapsed since the last preceding dose varying from two to twenty-six days. In all, eight severe shocks were observed. The opsonic curve in these patients did not vary markedly from the average of the other fifteen cases.

The later or final results of the use of the serum are difficult to estimate because of the simultaneous use of so many other remedial agents. In the majority, especially when the process was not of too long duration, there has been a definite improvement, and in some the change has been remarkable.

In comparison with an equal number of patients at approximately similar stages of the disease who were in the hospital at the same time and who received identical treatment with the exception of the serum, no very definite advantage could be observed. The opsonic indexes of those who did not receive serum did not rise, as a rule, so rapidly, and it appeared that the serum and vaccine had some complementary action when given together. When considered over a long period of time, however, their opsonins remained as consistently high, and the clinical improvement was apparently as pronounced as in the serum patients. It appeared at least that any added gain from the use of the serum was not sufficient to compensate for the severe pain and discomfort attending its administration and the dangers of the anaphylactic shock.

In addition to our cases, Dr. J. J. Moore of St. Luke's Hospital administered the serum to four patients suffering with chronic arthritis probably of streptococcal origin. The treatment differed from ours in that the serum was the only therapeutic agent employed over periods ranging from two to eight weeks. In no instance was there any improvement which could be accredited to the serum. One patient had an acute inflammatory arthritis involving the ankle, toe, and finger joints during the course of serum treatment. Although this patient received from 10 to 15 c.c. of serum daily, the joint inflammation persisted. In a second case in which the tonsils had been removed before serum therapy was commenced, the throat became acutely inflamed and persisted for some time in spite of the administration of serum. In this case a virulent hemolytic streptococcus was isolated from the throat.

The reactions following the serum injections were usually mild, local in character, often nothing more than an erythema, or pruritis around the site of injection. An edema of the lower limbs was observed in one patient following daily doses of 10 to 15 c.c. of the serum. This was thought to be a peculiar allergic reaction since the heart and urine were normal. There was no definite rise in the opsonic index in any of these patients during the serum treatment.

CONCLUSIONS

1. The administration of horse serum in repeated doses may be followed in 25 per cent. of the cases by dangerous degrees of anaphylaxis, even in patients who give no history of previous use of horse serum or of asthmatic symptoms.

2. Heating and aging the serum does not completely remove its toxicity.

3. Clinical observation and the estimation of immune bodies do not show any added advantage from the use of an antiserum in chronic arthritis even when a concentrated serum with much greater potency than the usual commercial serums was employed. In two cases, acute streptococcus infections arose during and in spite of its administration.

4. Attempts to increase the value of such a serum by concentration have not been successful, so far as its employment in chronic arthritis cases is concerned. Whether or not such concentrated serum might have advantages in acute streptococcus infection has not been determined.

5. In view of these facts, the use of antistreptococcus serum in the treatment of chronic arthritis is, under present conditions, neither advisable nor justifiable.

122 South Michigan Boulevard.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 2133*)

XII

DISINFECTION OF SCHOOLS

In view of the fact that contact is apparently a necessity for the spread of almost all, if not all, of the contagions that visit schoolchildren, disinfection, as so long practiced, is unnecessary and a delusion. Also the closing of schools is unnecessary. Fumigation of schoolrooms and schoolbuildings has been abolished in many large cities. The ordinary care of the schoolroom involves the free admission of sunlight and pure air and the removal of dust by a vacuum cleaner or by moist sweeping or mopping.

If a contagious disease occurs, (*a*) the child's desk, chair, and the immediately surrounding desks and chairs, as well as the floor, should be sprayed and washed with a strong solution of a germicide or disinfectant. (*b*) The child's books, pencils, etc., should be destroyed, unless the books are valuable, in which case they should be subjected to dry heat or to formaldehyd cabinet fumigation. (*c*) The pupil's clothing should be boiled or efficiently fumigated before he returns to school.

There is no question that most all so-called children's contagious diseases are more prevalent during the months that schools are in session than during vacation times. Hence schools do distribute infection by allowing crowding and close association with infected persons; also because the confinement diminishes the resisting power of the well. Therefore, the necessity for cleanliness, freedom from dust and for fresh air and sunlight is readily recognized.

DISINFECTION

Fresh air and sunlight let freely into infected rooms and into the sickrooms aid in killing germs and curing the patients. Schoolrooms with open windows and open-air schools have less contagion than ordinary schoolrooms.

Oxygen is not a very active bactericidal agent. Ozone if brought to the germ is effective, but pure ozone is difficult to furnish to infected rooms or to introduce into infected parts of the body, and ozone treatments

of infection are generally fallacious and fraudulent. Hydrogen peroxid solutions, if fresh and uncontaminated, are efficient in killing germs, when brought into contact with them. To be efficient the strength should be 50 per cent. of aqua hydrogenii dioxidi.

Fumigation after scarlet fever, diphtheria and measles does not seem to pay for the cost and trouble it causes, and should be abolished. Proper fumigation with strong formaldehyd, carried out by boards of health, should still be done for small-pox and tuberculosis, and perhaps for erysipelas, childbed fever and tetanus, especially in hospitals. Spraying with germicides of all the immediate surroundings of an infected patient is the method of disinfection now most satisfactory. All washable clothing and bedclothing should be boiled: all other clothing should be baked and put into the sunlight. Carpets and rugs should be washed with antiseptics. Various washing solutions may be used, such as chlorinated lime solutions, 5 per cent., formaldehyd solutions, corrosive sublimate solutions 1:500, 5 per cent. phenol (carbolic acid) solutions, or better, the higher coal-tar disinfectants, as liquor cresolis compositus. The New York Board of Health orders the woodwork and floors scrubbed with hot solution of 1 pound of washing soda to 3 gallons of hot water. Bedding and night clothing are ordered soaked in phenol solutions and then poiled in soapsuds for half an hour. Books and toys should be burned.

Dr. Dixon,[1] Commissioner of Health of Pennsylvania, suggests as a substitute for the combination of potassium permanganate and formaldehyd, the following: "sodium dichromate, 10 ounces avoirdupois; saturated solution of formaldehyd gas, 1 pint; sulphuric acid, commercial, 1½ fluidounces." He states that the sulphuric acid and formaldehyd gas form a stable solution. "This, after it cools, should be poured over the crystals of sodium dichromate spread out in a thin layer over the bottom of an earthenware vessel having ten times the capacity of the volume of the ingredients used." He finds this process more rapid than the combination with potassium permanganate.

The danger to others lies in carriers and missed cases, those who are so mildly sick as to escape medical care.

The contagious disease hospital is the only safe place for tenement cases; this prevents the infection of others, as families in tenements have no isolation rooms and no trained nurses to carry out disinfection.

PERSONAL HYGIENE OF SCHOOLCHILDREN

The schoolteacher and the trained nurse should note and correct many things found wrong in a child. They should also teach many simple truths as to hygiene. Only a few obvious hygienic mistakes will be touched on before conditions that may cause infection of others are discussed.

Feet.—A good working rule is for broad-toed shoes always; no heels for the earlier years of the child; low heels later; and if must be, still later, heels a little higher. Rubber heels are all right if desired, but not rubber soles, unless perhaps for playing tennis. The weight of a rubber-soled and heeled shoe is too great for constant, or even for a few hours' continuous use. Also, completely rubber-soled and heeled shoes cause the feet to perspire, to say nothing of the undesired insulation of the person. Low shoes for summer, high shoes for winter and rainy weather, and storm shoes or rubber overshoes for rain and snow are necessities for health. If a child wears rubber boots in stormy weather, they should be removed while in school. Occasional observations of a child's feet and insistence that proper shoes be worn will prevent future corns, bunions and weakened arches. Too short and too narrow-toed shoes ruin the feet of young men and young women. Also, this continuous dancing fad causes corns and callouses to occur on different parts of the toes, which means future trouble, if not properly cared for or prevented.

Hygiene of the Skin.—Briefly to refresh our memory as to the anatomy and physiology of the skin, it may be noted that the different layers of the cells of the epidermis, or horny layer of the skin, change their chemical structure as they advance to the outer layer. They gradually die, so to speak, and then are cast off. This layer contains no blood-vessels and no lymph-channels, and is a distinct protection to the body against the absorption of toxins and germs. If this layer is broken by injury, an absorptive area is immediately presented, and infection may readily occur. Nature makes this protective layer thickest where injury is likely to be the greatest, such as the palms of the hands and the soles of the feet. The hair and nails are really projections of this layer of horny cells.

Some drugs in solution or ointment may be rubbed or massaged through the horny layer into the layers of absorption, that is, the rete layer. Irritants may also reach this layer after more or less corrosion or removal of the epidermal layer, and local inflammation may be caused. It is the rete layer that is especially inflamed in many conditions of eczema.

The sebaceous glands of the skin may be overactive or underactive. If they are overactive, too much oily substance reaches the skin and hair and the parts become greasy. If the opening of a gland becomes clogged with dust or other particles, the canal and gland become more or less congested and the result is a so-called comedo or blackhead, and pathogenic germs may grow, especially the pus-forming germs, and a condition of acne or infection occur. If these sebaceous glands secrete insufficiently, the skin becomes dry and scaly, perhaps brittle, cracks readily, insensible perspiration is interfered with, and the whole system may be more or less affected, depending on the seriousness of this condition.

The sweat-glands must be sufficiently active for the body to be in perfect health; they largely eliminate water, reduce the temperature of the body and keep the internal temperature normal. The few salts and the small traces of nitrogen that are eliminated by the sweat-glands may be disregarded; suffice it to say that the excretion of poisonous nitrogen compounds by the sweat-glands is very small. The odor of the perspiration varies with different individuals and with different races. Not infrequently it is intensely disagreeable, and the secretion, both as to odor and character and the amount of decomposition of fatty acids, varies with the part of the body from which the perspiration comes. When the sweat from an individual gives off a very disagreeable odor, the condition is termed bromidrosis, and requires treatment by a physician. The condition should be noted in children, and prevented if possible.

Dandruff and dirty, greasy scalps and insufficient cleanliness of the hair should be noted, and instruc-

1. Dixon, S. G.: A Substitute for Potassium Permanganate to Liberate Formaldehyd Gas from a Water Solution, THE JOURNAL A. M. A., Sept. 19, 1914, p. 1025.

tions given as to the proper care of the child's head. A good daily brushing, and a simple castile soap shampoo weekly (or at least once in two weeks), with proper drying of the scalp, should be given by the mother.

Besides the advice given the parents as to the care of the child's scalp, the teacher or nurse should note the condition of the child's skin as to cleanliness, greasiness, dryness or eruptions, and proper advice should be transmitted to the parents. Also, the condition of the clothing and the kind of underclothing should be noted, especially in young children, and if considered improper, similar advice should be given the parents on the subject of underclothing.

Children and parents should be instructed not to use strong, irritant soaps, and parents should be urged to seek medical advice when a child's skin is too greasy and acne of the face is beginning to develop, when the child's skin is too dry for health, and when there is any eruption. They should be warned against the use of all nostrums, whether ointments or liquids, as liable to cause more harm than good. Parents should be advised to give their children only the simplest kind of food, to give them no tea and coffee, and to forbid their eating large amounts of sweets; especially is such advice necessary when there are eruptions on the skin.

Contagious Skin Diseases—The principal contagiums that occur on the skin of schoolchildren are ringworm, body- and head-lice and scabies. None of these conditions can be well treated at the school or in dispensaries, but the treatment must be carried out at the home of the infected child. No verbal or written instructions will accomplish half so much as a visit from the trained nurse and her personal instruction of the parents. Also she can take a general survey of the other children of the family and of the household.

It is not necessary to describe the treatment for these several troublesome but simple conditions. The various parasiticides are well understood, but the whole success of treatment lies in the care exercised and the curative measures taken in the child's home. When the patient's family can afford it, the Roentgen-ray treatment of ringworm is perhaps the ideal treatment.

Body-lice rarely occur in children and demand a cleansing bath and the baking of the underclothing in an oven at a temperature above the boiling point, but not high enough to burn the clothing.

Pediculosis Capitis.—Aside from being an evidence of neglect, the head-louse may be the means of conveying infection, for example, of typhus fever.

Dr. Jacob Sobel[2] of the Department of Health of New York City describes the method of handling this infection in New York, and also shows how greatly the disease has been reduced by the home instructions that the board of health has inaugurated. Following are the instructions issued by the New York board of health to the parents of children who are found to be infected with pediculi:

Children affected with vermin of the head are excluded from school. The following directions will cure the condition:

Mix ½ pint of sweet oil and ½ pint of kerosene oil. Shake the mixture well and saturate the hair with the mixture. Then wrap the head in a large bath-towel or rubber cap so that the head is entirely covered; the head must remain covered from six to eight hours.

(Tincture of larkspur may be used instead of oil mixture. The directions for use are the same.)

After removing the towel, the head should be shampooed as follows:

To 2 quarts of warm water add 1 teaspoonful of sodium carbonate. Wet the hair with this solution and then apply castile soap and rub the head thoroughly about ten minutes. Wash the soap out of the hair with repeated washing of clear warm water. Dry the hair thoroughly.

Nits: If the head is shampooed regularly each week as above described, it will cure and prevent the condition of "nits."

Vulvovaginitis.—Just what methods are advisable to determine that a female child has vulvovaginitis, which may be transmitted to others by the school water-closets and by other means of transmission, is difficult to outline. It must be recognized, however, that a great deal of this condition occurs in young girls. The discharge may be non-specific, or may be associated with some eruption or irritation of the genital region, or it may be actually due to an infection from gonococci. Microscopic examination and bacteriologic cultures are the only means of determining the character of the discharge.

It being ascertained that a girl has a discharge, it is the duty of the medical inspector or trained nurse to insist that the family have their physician properly treat the patient. The necessity of bacteriologic examination must be emphasized, the danger of contagion urged, and the necessity for ascertaining the source of the child's infection discovered, if possible.

It is certain that these little patients frequently masturbate; whether this is a cause of the inflammation, or whether the irritation causes the bad habit, is a matter of unimportance. Feeble-minded girls are likely to have a vaginal discharge, and have been found to be often infected with gonorrhea.

Dr. F. G. Taussig[3] urges the following measures to prevent the vaginal infection from entering institutions such as orphan asylums and children's homes:

First, he would examine a vaginal smear from all girls applying for admission, and if gonorrheal infection is discovered, the child should be excluded until cured. If the disease is discovered in an institution, the patient should be isolated and the nurse in attendance should take measures to prevent the infection of others.

As further preventive measures of gonorrheal infection of female children, Taussig advises that 1 drop of a 2 per cent. silver nitrate solution be instilled into the vestibule of the vagina at the birth of every female child whose mother shows evidence of gonorrhea. He would advise this even if only about 5 per cent. of gonorrheal vaginitis in young children occurs directly after birth. He also believes that "the adoption of the U-shaped seat with low bowl and other precautionary measures to prevent the spread of the infection in the lavatories in schools, playgrounds, comfort stations and tenements" would prevent a great many cases of innocent infection.

The curative treatment is the gentle, frequent cleansing douche, as warm boric acid or borax solutions, and the more or less frequent applications of silver salt solutions. The little patient should not be considered cured until several examinations of the smear have shown gonococci to be absent.

(To be continued)

2. Sobel, Jacob: New York Med. Jour., Oct. 4, 1913, p. 656.

3. Taussig, F. G.: Am. Jour. Med. Sc., October, 1914, p. 480.

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GASKELL AND THE PHYSIOLOGY OF THE HEART

The stirring events of recent weeks, when men's minds have been turned from the paths of intellectual life into other fields of human activity, should not make us oblivious of the names which deserve honor because of what they represent in science. For this reason we shall not forego the opportunity to refer to the death of Dr. Walter Holbrook Gaskell at his home in England, Sept. 4, 1914, at the age of 67 years. To this talented physiologist, stimulated by the environment of the Cambridge school under the influence of Michael Foster and trained in Ludwig's laboratory at Leipsic, we owe some of the fundamental observations regarding the mechanism of the phenomenon known as heart-block — a condition to-day recognized clinically and studied experimentally wherever the medical sciences flourish. It was Gaskell who invented the term "heart-block" and produced it experimentally by clamping the auriculoventricular and sino-auricular grooves, which he calls "the two natural blocking points" of the muscular contraction wave. One of his biographers, Dr. Fielding H. Garrison of the Army Medical Museum in Washington, has summarized the importance of Gaskell's endeavors in this field as follows: In his view, the original Stannius experiments become simple cases of temporary block. This view has been brilliantly confirmed by the discovery of the vestigial muscular structures known as the auriculoventricular bundle of His and the sino-auricular node of Keith and Flack; also by the clinical and pathologic findings in the disease described by Morgagni in 1761 and now known as heart-block or the Stokes-Adams syndrome. Gaskell even produced the two-, three- and four-time gallops of modern clinicians, in which the ventricle drops one or more of its beats. Schiff's observation that the ventricle of a dying heart beats slower than the auricle is interpreted as the effect of a gradually increasing block. Gaskell also produced the clinical condition known as "fibrillation of the heart" in an isolated strip of cardiac muscle, interpreting the phenomenon as due to blocking of the connections between individual muscle cells. In recent medicine, the various rhythmic disorders of the heart are regarded, not as cases of nervous unbalance, but as the effects of blocking of the peristaltic wave which passes from sinus venosus to bulbus arteriosus, and from muscle fiber to muscle fiber.[1]

In these days, when the relative merits of the neurogenic and myogenic hypotheses of the causation of the heart-beat are still being debated vigorously, we may recall that it was the early work of Gaskell and of Engelmann in particular that furnished serious objections to the neurogenic thesis earlier supported. These physiologists came to the conclusion that the source of the cardiac rhythm was to be found, not in the ganglia scattered about its cavities, but in the muscular cells themselves. It was their contributions which inaugurated the revival of the myogenic theory.

Aside from these classic researches on the motor mechanism of the heart, science owes to Gaskell numerous important contributions to other chapters of biology, notably on the sympathetic system and on organic evolution. To those who appreciate the confusing detail in the factors concerned in the latter field, the trend of Gaskell's mind may be described by his ability "to state the problems in terms of biologic phenomena rather than in metaphysical terms."[2]

THE PITUITARY BODY

The discovery by Marie[3] that an intimate relationship exists between the pituitary body and acromegaly created a new interest in a body which previously had been of interest purely on account of its anatomic relations and its histologic structure. About a decade later Oliver and Schäfer[4] found that extracts made from the entire pituitary body produced a rise in blood-pressure when given intravenously. By working with extracts made from its various parts, Howell[5] concluded that the pressor effect was produced only by posterior lobe extracts. Later it was found by others that posterior lobe extracts caused diuresis, dilatation of the pupil, an increase in the secretion of milk and the contraction of unstriped muscle, especially that of the arteries, uterus, intestines and bladder.

The evidence that the pituitary body is essential to life is now convincing. Paulesco[6] and Cushing,[7] using an improved technic, showed that fatal results are to be expected from removal of the anterior lobe. Partial removal of the anterior lobe led to striking changes in metabolism.

1. Garrison, F. H.: Walter Holbrook Gaskell, Science, 1914, xl, 802. Other biographies will be found in Nature, 1914, xciv, 93; Brit. Med. Jour., 1914, No. 2804, p. 559.
2. Pike, F. H.: Dr. Gaskell's Work on Organic Evolution, Science, Dec. 4, 1914, p. 805.
3. Marie, P.: Rev. de méd., 1886, vi, 297.
4. Oliver, G., and Schäfer, E. A.: Jour. Physiol., 1895, xviii, 277.
5. Howell, W. H.: Jour. Exper. Med., 1898, iii, 245.
6. Paulesco, N. C.: L'hypophyse du cerveau, Paris, 1908.
7. Cushing, Harvey: The Hypophysis Cerebri, The Journal A. M. A., July 24, 1909, p. 249.

The knowledge that extracts of the anterior lobe, which is glandular in structure, are without marked immediate effects when injected intravenously, whereas extracts of the posterior lobe, which is a nervous structure, produce striking immediate results is very interesting when one considers that removal of the posterior lobe is compatible with life, while removal of the anterior lobe terminates fatally.

Feeding experiments have not been wholly satisfactory. Wulzen[8] has recently found that when young fowls were fed with anterior lobe substance a retardation of growth resulted. This effect was especially marked in males.

From a therapeutic point of view the most striking results have come from the administration of posterior lobe extracts. Favorable results have been reported by many from the use of posterior lobe extracts in the treatment of post-partum hemorrhage, uterine inertia and postoperative shock; on the other hand, its use in labor is in certain cases followed by grave results, rupture of the uterus being reported after the repeated administration of some commercial preparations.[9]

The recent work from the Hygienic Laboratory by Roth[10] of the Public Health Service on the standardization of pituitary extracts may throw some light on some of the results obtained in therapeutics. Roth examined preparations obtained from six different manufacturers and found that the activity of commercial posterior lobe extracts varied widely when tested by three different methods, their relative activity on the isolated uterus of the guinea-pig being as 7.5 to 1. The commercial preparations which have been responsible for untoward results have therefore been shown to be exceedingly active ones. Roth could assign no positive reason for such great variability. He concludes that there is need for uniformity in the strength of commercial pituitary preparations, and to bring this about advocates their standardization on the isolated uterus of the virgin guinea-pig, suggesting an arbitrary standard. He further suggests that clinical studies should then be made to determine the therapeutic dosage.

8. Wulzen, R.: Am. Jour. Physiol., 1914, xxxiv, 127.
9. Herz, E.: Zentralbl. f. Gynäk., 1913, xxxvii, 720. Espeut, G.: München. med. Wchnschr., 1913, lx, 1774.
10. Roth, G. B.: Pituitary Extract, THE JOURNAL A. M. A., Aug. 8, 1914, p. 476; Hyg. Lab. Bull. 100, U. S. P. H. S., 1914.

AN INTERRELATION BETWEEN OXYGEN AND CARBON DIOXID IN THE BLOOD

Among the numerous illustrations of physiologic regulation in the functions of the body none exhibits a greater degree of exactness than those furnished by the absorption and dissociation of the gases of the blood. With respect to the relation of oxygen to the circulating medium this has been demonstrated more strikingly perhaps than is true in the case of the carbon dioxid which ordinarily accompanies it. With the demonstration of the unique rôle of the latter gas in regulating respiration, and presumably other activities of the organism, has come an increasing knowledge of its exchange between tissues, blood and external atmosphere, respectively. The average arterial blood, in which the hemoglobin is 96 per cent. saturated, contains 17.76 c.c. of oxygen in combination per hundred c.c. of blood, or a total of 18.1 c.c. if to this is added the small amount of the gas which is in simple solution at the oxygen pressure of arterial blood. Under normal conditions the same individual shows a definite and constant relation between the pressure of carbon dioxid and the amount of this gas taken up by fresh defibrinated human blood. It does not differ much for different individuals. According to Christiansen, Douglas and Haldane,[1] at 40 mm. pressure of carbon dioxid, 100 volumes of oxygenated human blood take up about 50 volumes of carbon dioxid; and at about 80 mm. pressure 15 additional volumes are taken up.

These investigators, working in the Physiological Laboratory at Oxford and the Institute of General Pathology at Copenhagen, have demonstrated that at a given pressure of carbon dioxid, blood which has been deprived of oxygen takes up considerably more carbon dioxid than oxygenated blood. The oxygen—and the same is true for carbon monoxid—thus tends to drive out carbon dioxid, and this action depends on the saturation of the hemoglobin. For the metabolic performances of the organism it is interesting to learn that the oxygenation of the blood in the lungs helps to drive out carbon dioxid, and increases by one-half or more the amount of carbon dioxid given off at each round of the circulation. The deoxygenation of the blood in the tissues in turn helps the absorption of carbon dioxid and diminishes by about 40 per cent. the rise of carbon dioxid pressure in the venous blood.

If these facts are correct it follows that the giving off of carbon dioxid by the lungs is to a large extent consequent on the taking up of oxygen. Haldane and his colleagues have insisted for some time that under a variety of conditions the uptake of oxygen may be supported by physiologic activity of the lung epithelium. Under such conditions, therefore, the giving off of carbon dioxid would also be dependent on this activity. In any event these interrelations between the movements of the two gases, long ago suspected and now more definitely demonstrated, give an added illustration of the interdependence of many physiologic functions in the organism.

In connection with the investigation of the behavior of carbon dioxid in human blood,[1] it has been possible to calculate the rate of blood-flow through the lungs. Every one must realize, from general con-

1. Christiansen, Johanne; Douglas, C. G., and Haldane, J. S.: The Absorption and Dissociation of Carbon Dioxide by Human Blood, Jour. Physiol., 1914, xlviii, 244.

siderations, that this involves rapid change. The statement that the rate of this blood-flow may amount to 7.7 liters (8.1 quarts) per minute for a person with a total blood volume of 4.7 liters (4.9 quarts) offers a concrete instance of the marvelous performances of the human circulation.

SOURCES OF CEREBROSPINAL FLUID

It has been thought that the cerebrospinal fluid is derived from the choroid plexuses and possibly also from the nervous tissues by way of the perivascular spaces, but conclusive evidence as to its source has been lacking until recently. Thus Dandy and Blackfan,[1] and also Frazier and Peet,[2] have produced internal hydrocephalus in animals by blocking the aqueduct of Sylvius. Then Weed,[3] under the direction of Cushing, took a step nearer to the final solution of the problem by introducing a cannula directly into the third ventricle from the fourth. When the cannula is introduced there is at first a rapid flow of several drops, whereupon a gradual diminution ensues, and after three or four hours, all flow ceases. The fluid obtained in this way appears identical with that in the subarachnoid spaces. By Weed's method it will be possible to study the action of drugs and other factors on the production of fluid, that is, on the functions of the choroid plexuses.

Around the cerebral vessels are spaces which extend to the capillaries and communicate into the subarachnoid spaces. If the direction of the flow of the fluid in these perivascular spaces could be determined, light would be thrown on another possible source of the cerebrospinal fluid. By subarachnoid injection according to the method already discussed in these columns,[4] Weed found no granules of Prussian blue in the perivascular spaces after injection at low pressure. After injection under medium pressure granules were found in the perivascular and pericapillary spaces, not, however, in the vessels, but sometimes adhering to the periphery of the nerve cells and their prolongations. On injection under high pressure, granules sometimes were found in the lumen of capillaries. These results point unmistakably, it would seem, to a flow from the capillaries into perineuronal and perivascular spaces and thence into the subarachnoid spaces, where the fluid mixes with that from the ventricles.

These results point clearly to a dual source of the cerebrospinal fluid, namely, the choroid plexus and the cerebral capillaries. It will be recalled that by the same method of subarachnoid injection, Weed[4] could demonstrate that the cerebrospinal fluid escapes largely by way of the longitudinal sinuses, and also along the nerves. These results certainly go far to give us a clear idea of the circulation of the fluid.

1. Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, The Journal A. M. A., Dec. 20, 1913, p. 2216.
2. Frazier and Peet: Am. Jour. Physiol., 1914, xxxv, 268.
3. Weed: Jour. Med. Research, 1914, xxxi, 93.
4. Absorption of the Cerebrospinal Fluid, editorial, The Journal A. M. A., Nov. 21, 1914, p. 1857.

THE CORPUS LUTEUM AND OVULATION

Aside from the immediate scientific value of the experiment, there is a peculiar sort of satisfaction in being able to duplicate new facts found in one species of animals by observations on another species. Whenever a process or a structure is seen to be common to many types, the frequency of its occurrence gives a justification for belief in its universality. It is often asked whether physiologic or pathologic phenomena noted in the dog, cat, rabbit or other laboratory animals are safely referable, under similar conditions, to man. The more wide-spread such phenomena are in the animal kingdom, the more justifiable is the reliance which we feel in upholding the belief in their broad applicability. Comparative physiology and pathology deserve the earnest consideration of the student of human biologic manifestations.

In view of what has just been said, there is a special satisfaction derived from the report that the desiccated fat-free substance of the corpus luteum of the cow, when injected in suspension, in proper dosage, into an actively laying fowl immediately inhibits ovulation. The duration of this effect varies with different birds from a few days up to two or three weeks. After the bird begins ovulating again the laying goes on unimpaired. The same effect is produced by the injection of extracts of the lutear substance, either intravenously or intra-abdominally. The active substance producing the inhibition is inactivated by boiling.[1] As Pearl and Surface,[1] who ascertained these facts, point out, the ovulation-inhibiting function of the corpus luteum is specific in a physiologic or chemical sense. The fact that the same chemical substance inhibits ovulation in mammals and birds, the latter of which do not possess any organ corresponding to the one which produces the substance in mammals (the corpus luteum), suggests that natural selection probably had nothing to do with the evolution of either the organ or the function in the mammals. If it had, one would expect that the function would have been perfected as a specifically and exclusively mammalian one.

The chief interest, to the student of medicine, in the effect of corpus luteum substance on ovulation in the fowl lies in its corroboration of the well-known work of Leo Loeb[2] on mammals. He has shown that one function of the well-developed corpus luteum in the

1. Pearl, R., and Surface, F. M.: Studies on the Physiology of Reproduction in the Domestic Fowl, IX, On the Effect of Corpus Luteum Substance upon Ovulation in the Fowl, Jour. Biol. Chem., 1914, xix, 263.
2. Loeb, Leo: Jour. Morphol., 1911, xxii, 37; Zentralbl. f. Physiol., xxv, No. 9; Virchows Arch. f. path. Anat., 1911, ccvi, 278; Deutsch. med. Wchnschr., 1911, No. 1, and other papers.

mammalian reproductive cycle is to inhibit ovulation. To the confirmation which this finding has already received, these new studies in avian reproduction give added support. The corroboration of one more instance of an important physiologic function specifically controlled by a chemical regulation is in line with recent developments. It suggests, to quote Pearl and Surface, that since it is possible to obtain a chemical substance which inhibits ovulation, without in any way otherwise affecting the normal vital processes of the bird, it will also probably be possible to find a chemical substance which has the opposite action and will stimulate, or better activate, the ovulation mechanism.

"MOTHERHOOD WITHOUT FEAR"

A few months ago *McClure's* magazine announced to the prospective mothers of the country that a remarkable discovery had been made by which the pangs of childbirth were to be forever abolished. The announcement was made in the form of an article by two women, apparently of no medical training. The remarkable discovery was the long-discredited scopolamin-morphin analgesia, first suggested in 1902. This sensational article was taken advantage of by a pharmaceutic firm for free advertising of a nostrum, based on a similar formula; a number of physicians previously unknown brought themselves into newspaper prominence with naive statements regarding their ability in the use of the method and with reports of their success; a host of "sob-writers" and sisters of the pen, whose work is tested by their ability to wring anguish from sympathetic hearts, filled columns of the daily press and magazines with pseudoscientific rubbish.

And now, when this sensation has about died out, we are supplied with another. This one is furnished by Mr. Vance Thompson, playwright and novelist; the medium is the *Cosmopolitan* magazine. In an editor's note the article describing this new method of eliminating the pains of labor is introduced as follows:

> The all-absorbing events of the last days of July prevented the spread of the most joyful message ever sent from the scientist's laboratory to woman. It was that henceforth she will bear children not in pain and terror but in gladness. Paris knew of it; the French Academy of Medicine had accepted it, but it got no further. Mr. Thompson was then in the city and to him has fallen the wonderful opportunity of carrying the good news to the men and women of America. Here it is.
>
> Attention must be called to the fact that the practice here described has nothing to do with the morphin-scopolamin treatment originating some years ago in Freiburg and which recently has had some measure of exploitation under the popular name of "twilight sleep." This requires special and very expert care on the part of the physician, and has the further disadvantage of drugging the patient into a state of partial insensibility. It can be administered properly only in hospitals, and its use in general practice should, and probably will, be forbidden by law. But detoxicated morphin, without the slightest danger to the mother, causes neither check nor delay, does not interfere with the necessary rhythmic muscular contractions, and makes painless childbirth a scientific certainty.

As a composition, Mr. Thompson's article is fairly comparable with that of the two ladies who reintroduced "twilight sleep" to American women; but for sentimental rot, for pseudoscientific rubbish, and for downright "sob-writing" Mr. Vance Thompson must be given the palm.

As to the facts, in one place it is stated:

> I do not write of this discovery as being in an experimental stage. It has been accepted by the French Academy of Medicine — the date was the third week in July. Surgeons, gynecologists, chemists, doctors of all degrees have examined, tested, approved. For once scientific men have been unanimous.

There is no excuse for such false statements; even Mr. Thompson could easily have learned the truth.

What are the facts? What is this "detoxicated morphin" which, we are told, eliminates the pains of childbirth? Last July, Ribemont-Dessaignes reported to the Academy of Medicine of Paris a number of cases of childbirth in which he had used, for the relief of pain, a preparation "discovered" by a chemist named Paulin. The nature of the preparation was not disclosed to the academy. September 1, presumably as a result of the suggestion of Paulin, a request came to the academy from the Minister of War asking the opinion of the academy as to the advisability of using this remedy, presented under the name "Tocanalgine" and "Antalgine," in military hospitals as a substitute for morphin. By unanimous vote the academy declared that, the formula and composition of these medicines being unknown, it could give no opinion. Since it was stated, however, that the new drug was produced by the action of enzymes on morphin, the academy appointed a committee to investigate oxydimorphin, a chemical substance which it was known could be produced by the action of enzymes on morphin. Under the direction of the committee, two chemists examined samples of the new preparation obtained directly from the discoverer. The examination showed that these samples were variable, and that they did not contain any oxydimorphin. The only active ingredient found by these chemists was morphin hydrochlorid, and this in quantities varying from 0.05 to 4 per cent. The conclusions of these two chemists were later emphasized by Bertrand who, after careful chemical and biologic tests of samples submitted to him, found that the solid residue was exclusively formed of hydrochlorid of morphin, and that it was fully as toxic and dangerous as morphin, as might be expected; the symptoms of poisoning were exactly the same as those of morphin hydrochlorid, and death occurred after the same interval. A dose of the preparation would give about ½ grain of morphin. In other words, judging from the reports which appeared in the *Journal de pharmacie et de chimie* for November 16, and the

Bulletin de l'Académie de médecine from July 21 to November 17, this so-called "detoxicated morphin" is essentially a solution of morphin in ampules. It will kill just as quickly as morphin, it will relieve pain just as quickly as morphin — because it is morphin. Naturally, the Academy of Medicine of Paris has not accepted the preparation.

We presume it is useless to protest against this shameless exploitation of the fears of prospective mothers of the country. But if magazines must have articles on this subject, let them at least confine themselves to the facts. The article in the *Cosmopolitan* is cruel, sensational and a disgrace even to yellow journalism.

Current Comment

CONGRESS PASSES ANTINARCOTIC BILL

The Harrison bill (H. R. 6282) for the suppression of illicit trade in habit-forming drugs passed the House December 10, after having been before Congress for over two years. The passage of the first and second Harrison bills regulating the manufacture and importation of habit-forming drugs has already been mentioned in THE JOURNAL.[1] The third measure, to regulate the interstate sale of opium and cocain preparations, passed both houses last summer, but on account of conflicting amendments was referred to a conference committee. This committee agreed on a report which was adopted by the Senate. When the report came up in the House in the last hours of the recent session, the question of no quorum was unfortunately raised, and the House adjourned without action. The bill consequently went over until the present session. The object of the bill is to restrict the sale of habit-forming drugs to persons desiring them for legitimate purposes. The difficulty has been so to word the measure as to prevent illicit traffic in these drugs without interfering with their legitimate use by physicians and others. As the bill passed the House in June, 1913, it exempted from the operation of the law the dispensing or distribution of habit-forming drugs by physicians, provided the physician in each case was personally attendant on such patient. This exemption was modified in the Senate to require that the physician should have been employed for the particular patient receiving such drug and that the drug should be dispensed in good faith. The bill as agreed on by the conference committee and as finally passed exempts the dispensing or distribution by physicians of drugs containing opium or coca leaves or any of their derivatives, provided the physician keeps a record of all such drugs dispensed or distributed, showing the amount dispensed, the date, the name and the address of the patient. If, however, the physician is in personal attendance on the patient, such a record is unnecessary. Physicians and all others buying drug preparations containing opium or cocain must order them on forms to be issued by the Commission of Internal Revenue. But physicians' prescriptions are specifically exempt. As has been frequently pointed out, it is not in any sense a regulatory measure, and the amount of good that it will or can accomplish will depend entirely on the local police regulations and the methods adopted by states and cities to enforce such regulations. But after years of long, patient effort and many revisions, the bill as passed is probably the best that can be formulated under existing conditions. A complete abstract of the bill will appear in a later issue.

1. The Harrison Bills and the Nelson Amendment, Medical Economics, THE JOURNAL A. M. A., April 18, 1914, p. 1276.

UNAPPRECIATED FEATURES OF THE SCHOOL LUNCH MOVEMENT

School lunches have become established in a large number of our cities, and a defense for their institution is now unnecessary. The maintenance of such a service is no longer defended solely on the basis of the needs of the poorer classes, but is encouraged in ways to avert the criticism that the school lunch leads to pauperizing and to the neglect of maternal responsibility in the home. The unquestioned benefits of a well-chosen warm lunch, usually supplied at the cost of the materials and service, have impressed both teachers and parents so that even the well-to-do commend and approve this latest innovation in the routine of the school day. As a rule, the school lunch room provides better food than the street vender. In most places the foods are chosen by persons trained in the field of dietetics, and the variety of dietary articles offered at one cent a portion is frequently quite impressive. It includes soups, salads, sandwiches, fruits, puddings and other dishes. The New York School Lunch Committee, in cooperation with the Bureau of Welfare of School Children of the Association for Improving the Condition of the Poor, for example, has maintained a service available to over 24,000 children in seventeen public schools situated in districts in which the need of such service is pressing. The registration has run as high as 2,353. In addition to this noon warm lunch service, the committee has operated a special 3-cent warm lunch of milk and crackers at 10 a. m. for anemic, ungraded and crippled classes. It begins to appear that the school lunch movement has engendered certain features which promise to contribute to the general welfare in a direction almost as important as that of the proper nourishment of the body. Educational and social possibilities, at first unforeseen, are being brought to notice.[1] The children of the well-to-do parents and the children of the poor have learned "to sit quietly as one family, to talk pleasantly with each other, to eat their food properly; and many acts of courtesy and generosity have been encouraged." The appeal which the school lunches have made has not infrequently been manifested by mothers who have had their interest in respect to special foods and dietary procedures aroused. Thus the school lunch scheme has fostered educational and social as well as economic purposes.

1. See the reports of leaders in the school lunch movement in the Journal of Home Economics, 1914, vi, 437.

ACTIVITY OF DIGESTIVE FERMENT PREPARATIONS

A recent bulletin of the Bureau of Chemistry emphasizes anew the importance of determining exactly the activity of digestive enzymes and ferments. The great difficulty with these preparations is that they do not keep well, that while active at first, many, after a time, lose their digestive activity. Examination of certain preparations supposed to contain definite enzymes or ferments showed that in reality they contained little, if any, of these agents. Other investigations showed that the manufacturers had employed the proper quantities of pepsin, pancreatin, diastase or similar enzymes, but no attempt had been made to determine their activity. On the other hand, disregarding scientific evidence as to the proper medium or combination of the enzymes, pepsin and trypsin, which tend to negative each other, have been combined; pepsin has been used in alkaline mediums, which destroy its activity, and trypsin has been combined with acid substances not suited to it. Further errors have arisen through overheating enzymes or through issuing them in strong alcoholic solutions, lessening their effectiveness. Manufacturers are warned by the Department of Agriculture, through the Bureau of Chemistry, that combinations claiming to contain digestive enzymes must be active when sold. If preparations tend to deteriorate in a short time, each lot should be dated and not sold after the period when they become inactive. While every manufacturer must be considered innocent until proved guilty and ignorant until proved knowing, it is a matter of knowledge that many manufacturers have marketed their various digestive mixtures with full appreciation of their worthlessness. The Council on Pharmacy and Chemistry nearly seven years ago called attention[1] to the various digestive impossibilities on the market. Practically all of these are still sold. To sell a sick patient a mass of inert material which he believes to be active is not only perpetration of a fraud on the patient, but does gross injury to the physician who prescribes for him and endangers still further the patient's health. It is to be hoped that the government will adopt measures that will prevent the sale of such useless and scientifically absurd combinations.

1. Liquid Combinations Containing Pepsin and Pancreatin, THE JOURNAL, Feb. 2, 1907, p. 434. The Digestive Impossibilities, THE JOURNAL, Feb. 9, 1907, p. 533.

THE MILK OF DIFFERENT BREEDS OF COWS

Among the various associations of breeders of milk cattle there is a lively competition in medical advertising literature for recognition of the superiority of the type of animal in which each happens to be primarily interested in either a commercial or a scientific way. Many physicians who read the announcements of the different groups of breeders have doubtless asked themselves whether the reputed claims of unlike composition for the milk of the various breeds of cattle concerned are in reality sufficiently distinctive to merit serious recognition from a scientific or practical point of view. It is, of course, widely recognized that types of dairy cattle which give a large amount of milk commonly furnish a product less rich in solids and particularly in the cream components. In this respect the milk from cows of the Jersey and Guernsey types departs noticeably from the Holstein variety; but inasmuch as it is believed, with some justification, that the composition of milk is more or less influenced by the period of lactation and the season of the year — that cows far along in lactation give richer milk than just after calving — one might well assume that incidental factors of this sort may easily counterbalance the inequalities of composition attributable to the differing types of cattle. During the past few years the laboratory of food and drug inspection of the Massachusetts State Board of Health has made extensive analyses of hundreds of samples of milk from Jersey, Guernsey, Ayrshire, Dutch Belt and Holstein cows, as well as from cross-bred or so-called grade cows.[1] The valuable data thus obtained under controlled conditions make it clear that variations in the composition of milk are due primarily to the breed, and to a less extent to the season of the year and the time since calving. The least variable milk constituents are the lactose and the mineral ingredients, both of which are therefore of value in detecting added water. Incidentally the fact is borne out, contrary to popular opinion, that milk obtained in summer under current conditions is, if anything, somewhat inferior in quality to that obtained in winter.[2]

THE SYSTOLIC DISCHARGE OF THE HUMAN HEART

The systolic discharge of blood from the heart and particularly the left ventricle, in man, is a factor of no small importance in the workings of the organism. The ability of the blood to distribute oxygen and thus permit the exhibition of energy under most favorable conditions, depends on its distribution by the cardiac muscle, and its oxygen-carrying capacity as expressed in its content of hemoglobin. The so-called tidal volume of the heart has never been measured with extreme accuracy. By estimations of what they term the "oxygen pulse," that is, the amount of oxygen consumed by the body from the blood of one systolic discharge of the heart, Henderson and Prince[3] have attempted to solve the problem of the magnitude of the discharge. The value of the "oxygen pulse" was calculated by dividing the amount of oxygen absorbed by the individual per minute by the number of heart-beats in the minute. From the data obtained for this factor under a variety of conditions causing various rates of

1. Lythgoe, H. C.: The Composition of Milk as Shown by Analyses of Samples of Known Purity Made by the Massachusetts State Board of Health, Jour. Indust. and Eng. Chem., 1914, vi, 899.

2. Inasmuch as the statistics may be of interest to physicians we append some of the average figures reported by Lythgoe:

	Solids Per Cent.	Fat Per Cent.	Protein Per Cent.
Jersey	14.7	5.6	3.4
Guernsey	14.6	5.2	3.7
Ayrshire	12.6	4.0	3.0
Dutch Belt	12.1	3.5	2.9
Holstein	11.7	3.4	2.9
Herd milk	12.8	4.0	3.3

3. Henderson, Y., and Prince, A. L.: The Oxygen Pulse and the Systolic Discharge, Am. Jour. Physiol., 1914, xxxv, 106.

heart-beat, Henderson and Prince infer that the systolic discharge of the left ventricle of a well-developed man working hard and with a pulse-rate of 140 per minute is not less than 100 c.c. (3⅓ ounces) of blood. At slow rates of the heart-beat the systolic discharge is probably 150 c.c. (5 ounces) or more. In men of poor physique it is believed to be probably not more than two-thirds as much. The tidal volume of the whole human heart, that is, its change in size during the complete cardiac cycle, might accordingly amount to 400 or even 500 c.c. (16⅔ ounces). Such figures are considerably larger than those suggested by previous workers and are about twice as large as the values adopted in some of the current writings. The question promptly suggests itself whether the pericardial sac is actually large enough to allow the heart to make strokes of the magnitude here indicated. Henderson and Prince[2] have made direct measurements of the pericardial capacity in man. Their figures vary quite widely, as might be expected, with the size and general physique of the individual, and range from about 350 to 700 c.c. (23 ounces). A comparison of the pericardial volumes and the maximum possible systolic discharges permitted by them show that the pericardial sac in man is large enough to allow a systolic discharge considerably greater than it may be reasonably supposed that the heart will ever make. It may interest the members of the Association to know that the investigations here reviewed were carried out in the laboratories of the Yale Medical School, with the aid of a grant from the Committee on Scientific Research of the American Medical Association.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—The house of Dr. Henry A. Darby, Athens, was destroyed by fire, December 3.——Major Henry A. Page, M.C., U. S. Army, has been appointed inspector-instructor in the medical department of the National Guard of Alabama and of five other states.

Tuberculosis Sanatorium Incorporated.—The Mobile City and County Sanatorium Company filed incorporation papers, December 3, the object being stated as the operation of a sanatorium or open-air camp in Mobile County for the treatment of tuberculosis. The organization has no capital stock, and the trustees incorporated are: Drs. Daniel T. McCall and Harry T. Inge, and Messrs. A. D. Block, Joseph D. Andrews and R. L. Waddle.

Extension of Mine-Rescue Station at Birmingham.—An extension of the mine-rescue station is needed at Birmingham, according to the report of Director Holmes of the Bureau of Mines, and recommendation to that effect has been made by the director in his annual report. He also recommends that living quarters be provided for the foreman in charge of the station in order that he may be on duty day and night. Birmingham is situated in a large and important mining district.

CONNECTICUT

Personal.—Dr. Simon R. Klein, formerly professor of histology and embryology in Fordham University School of Medicine, New York City, has been appointed pathologist of the Norwich State Hospital for the Insane.

GEORGIA

Personal.—Dr. William L. Funkhouser, Rome, has been elected medical director of the Cherokee Life Insurance Company, succeeding Dr. William W. Mangum, deceased.——Dr. Herbert E. Truax, Atlanta, has started for France for duty with the Red Cross.——Dr. R. S. O'Neal, Bronwood, has been appointed chairman of the Health Board of Terrell County.

Decrease in Infectious Diseases in Atlanta Attributed to School Inspection.—Dr. Willard E. Quillian, president of the Atlanta Board of Health, in a recent lecture, stated that there had been a notable improvement in the general health of the city through the suppression of infectious diseases. One year ago there were 350 diphtheria signs posted in Atlanta. At present there is only one. One year ago there were many cases of scarlet fever, to-day there are only four, and these are very mild. School inspection, he considered, had been a great aid in locating and checking the progress of disease.

ILLINOIS

Hospital Notes.—Frank M. Elliott, president of the Evanston Hospital Association, after nineteen years of service, has resigned on account of ill health.——The Compton Hospital was reopened December 3. It is now under the management of Dr. Clarence G. Pool.

Aim of State Tuberculosis Association.—The Illinois State Association for the Prevention of Tuberculosis and the other antituberculosis associations of the state are endeavoring this year to realize sufficient funds from the sale of Red Cross seals to pay for the services of a nurse in each community in the state.

Personal.—Dr. William P. Sherman, Aurora, was operated on for appendicitis, December 9.——Dr. J. Lenne Aleshire, Plainville, was painfully injured in a collision between his automobile and a street car in Quincy, December 4.——Dr. Albert N. Mueller has been appointed city physician of Rock Island, vice Dr. George G. Craig, resigned.

Unpaid State Health Board Recommended.—The Legislative Efficiency Committee, in its report on the administrative system of Illinois which appeared December 7, makes the following recommendations: The reorganization of the various health agencies into a state health department to be under the direction of a salaried health commissioner; an unpaid state health board of five officers to be appointed by the governor; the state health department to have supervision over the examination and licensing of physicians, pharmacists, dentists and nurses, and the regulation of those organizations which carry on other professions and trades for the protection of public health; a small board or committee to be provided for each profession to arrange for examinations, issue licenses and to revoke same for cause; the clerical and administrative work in connection with such examinations to be handled through one office and the action of the examining boards in revoking licenses, to be subject to review by the State Board of Health. The board of barbers' examiners to be abolished and the power of sanitary control over barbers to be exercised by the health department; the law for the collection of vital statistics to be made more effective; the pharmacy law to be revised; the cold storage of food products to be regulated and a state sanitary code to be enacted.

Chicago

Medicine Samples Not to Be Distributed.—The chief of police, on December 8, issued instructions for the arrest of any one distributing sample packages of medicine.

Zones of Quiet.—A resolution indorsing a petition before the city council to establish zones of quiet around hospitals, was adopted at a meeting of the council of the Chicago Medical Society, December 8.

Nurses' Association Needs Funds.—The Visiting Nurses' Association has issued an especial appeal for funds and announces that if the general public does not come to its aid many of its patients among the sick poor of the city will die from lack of nursing care.

Phone Exchange for Physicians.—A special phone exchange for physicians was advocated at a meeting of the council of the Chicago Medical Association, December 8. Drs. Willis O. Nance, Milton H. Mack and Albert W. Seidel were appointed a committee to urge the plan on the city council.

Health Conferences.—In connection with the Public Health Exhibition at the City Club, health conferences have been

2. Henderson, Y., and Prince, A. L.: The Systolic Discharge and the Pericardial Volume, Am. Jour. Physiol., 1914, xxxv, 116.

held on the following subjects: On December 4, "Food" was the topic for discussion. Prof. A. J. Carlson presided and the speakers were Dr. Carl Alsberg, chief of the Bureau of Chemistry, Washington, D. C.; Prof. John H. Long of Northwestern University and Dr. John L. White of the Chicago Municipal Laboratory. "Environmental Conditions" were considered at the evening session of December 7, and the noon session of December 8. The chairman at the first session was Prof. James H. Tuft, and addresses were made by Prof. C. E. A. Winslow of the New York State Board of Health; Miss Sophonisba Breckenridge of the Chicago School of Civics and Philanthropy, and Chief Sanitary Inspector Charles B. Ball of the Chicago Department of Health. Mr. Oscar F. Nelson, chief of the State Factory Inspection Department, Chicago, was the chairman at the second meeting at which Professor Winslow spoke a second time, and Dr. Alice Hamilton of the United States Bureau of Labor Statistics, delivered an address. The session of December 10 was devoted to "Infant Welfare." Mr. Lucius Teter, president of the Chicago Infant Welfare Society, was chairman, and addresses were made by Dr. Isaac A. Abt, Chicago; Passed Assistant Surgeon J. W. Schereschewsky, U. S. P. H. S., and Dr. Frank S. Churchill, Chicago. The noon meeting of December 12, over which Mr. Allen B. Pond presided, took up the question of "Health Administration," the speakers being Dr. George B. Young, health commissioner of Chicago, and Dr. Henry B. Favill, Chicago.

KANSAS

Personal.—Dr. Leon Matassarin, Wichita, while alighting from a street car recently, fell breaking his left humerus. ——Dr. Noah Hayes, who has practiced in Seneca for more than thirty-five years, has disposed of his practice and will live in Lawrence.

Government Recognizes Kansas Vital Statistics.—As the result of the enforcement of the Kansas Vital Statistics Law passed in 1911, Kansas has been placed among the twenty-four states accepted by the government as authorities on records of vital statistics.

Exceptional Outbreak of Diphtheria Abating.—Dr. John J. Sippy, Topeka, epidemiologist of the board of health, reports that diphtheria, which had run an almost unprecedented course throughout the state during October, is now abating. The outbreak started in the southeastern part of the state, the first cases being reported at Galena and Pittsburg. The progress of the disease could be traced along the railroad lines. At one or two places where medical inspection of schools was not indulged in on account of expense, it was necessary later to close the schools at greater expense. The board of health exhausted its supply of diphtheria antitoxin several times during the outbreak.

MAINE

Personal.—Dr. LeRoi S. Syphers succeeded Dr. Loring S. Lombard, resigned, as a member of the Board of Health of South Portland.——Dr. Edouard M. Marquis, Old Town, has gone to France to offer his services to the American Ambulance in Paris.——Dr. Edwin W. Gehring, Portland, has been appointed a member of the State Board of Health, vice Dr. Charles D. Smith, Portland, resigned.

MARYLAND

Civic Club Formed.—A Physicians' Civic Club has been organized in Baltimore by Dr. William T. Watson, with an initial membership of twenty-five.

Against Vaccine Law.—Believing that the compulsory vaccine law is unjust and drastic, the Washington County commissioners, sitting as a board of health, have adopted a resolution recommending that the health officer and all others in authority discontinue the rigorous enforcement of this law, allowing all to use their own judgment in the matter.

Lectures Before University Medical Society.—Dr. Lewis Gregory Cole of Cornell University delivered two lectures before the University of Maryland Medical Society, December 3, on "Anatomy and Physiology of the Stomach and Duodenal Cap," and on "Negative and Positive Diagnosis of Organic Lesions of the Stomach and Duodenal Cap." In the afternoon Lieut-Col. Champe C. McCulloch, Jr., M.C., U. S. Army, delivered a lecture on "Beri Beri."

To Join State University.—The University of Maryland, the College of Physicians and Surgeons and the Maryland Medical College, with three other institutions of learning were created into a Maryland State University, December 11. St. John's College, at Annapolis, was the only one of seven institutions that did not formally affiliate with the university, but this question will be decided at the annual meeting of their board in January. The affiliation of these institutions was decided on at the last session of the general assembly, when a law to that effect was passed.

Personal.—Dr. Franklin P. Mall, Baltimore, professor of anatomy at Johns Hopkins Medical School, has been appointed head of the new department of embryology of the Carnegie Institution in Washington. It is not likely that Dr. Mall will sever his connection with the Johns Hopkins University to pursue his new work.——Dr. George H. Whipple, a member of the faculty of the Johns Hopkins Medical School, has been appointed a director of the George Williams Hooper Memorial Foundation for Medical Research in the University of California.——Dr. Veader N. Leonard of Baltimore, who left on the first Red Cross expedition, is on duty at a 300-bed war hospital at Paignton, Devonshire, England.

MASSACHUSETTS

Personal.—Drs. Henry M. Chase and Gilbert F. Day have been appointed assistant surgeons to the Peter Bent Brigham Hospital, Boston.——Dr. Francis D. Donoghue, Boston, has been appointed a medical expert to the Industrial Accident Board.

New Health Council.—The governor has nominated the following as the new health council: Prof. W. T. Sedgwick, Massachusetts Institute of Technology of Boston; Drs. Milton J. Rosenau and David Linn Edsall of Harvard Medical School; Prof. George Chandler Whipple, sanitary engineer and secretary of the administrative board of the School for Health Officers; Dr. William J. Gallivan, former chairman of the Boston Bureau of Child Hygiene, and Dr. Joseph E. Lamoureaux, Lowell, a member of the local Contagious Hospital Commission and school committee. This council will cooperate with Dr. Allan J. McLaughlin, the new head of the board.

MICHIGAN

Hospital Sought for Cheboygan.—At a meeting of the medical profession held in Cheboygan, November 24, Dr. Stanislas A. St. Armour and James H. McCall were appointed a committee to confer with the Visiting Nurses' Association as regards establishing a hospital in Cheboygan.

Free Clinic at Lansing.—The Ingham County Nurses' Association has established a free medical clinic at Lansing, which was opened December 4. The Ingham County Medical Society has been asked to give free medical service for this clinic, which has been opened in rooms adjoining those of the Associated Charities in the Prudden Building.

Personal.—Dr. Edgar A. Planck, Union, has been elected a member of the state senate.——Dr. Flemming Carrow, who left the University of Michigan three years ago to combine pleasure, profit and health in the fruit-growing industry of northern Michigan, has made a specialty and success of growing chestnuts on his farm near Traverse City.

MISSISSIPPI

Hospital Notes.—The work on a new hospital at Meridian, which Dr. James H. Rush is about to build, will begin before the end of the month. The building will contain ten private rooms and four wards, in addition to the necessary offices, operating rooms, etc.

Personal.—Dr. John H. Lynn has resigned as house surgeon of the State Charity Hospital, Vicksburg.——Dr. Walter H. Rowan, Jackson, chief sanitary officer of Mississippi, has started for Central America to take charge of a campaign for the International Sanitary Commission. The State Board of Health, at a meeting November 20, adopted resolutions voicing the regret and reluctance with which the board accepted Dr. Rowan's resignation, and bearing testimony to his honesty, competency and fidelity.——Dr. Willis Walley, Richton, has taken up his duties as chief sanitary inspector of the state.

NEW YORK

Health Lectures at Albany.—A series of lectures, under the auspices of the State Department of Health, has been begun at Albany Medical College. The lectures are delivered on Tuesdays at 5 o'clock.

Tuberculosis Hospital Opened.—The Homestead Sanatorium, the Tuberculosis Hospital for Saratoga County, was opened December 5. The site for the hospital was donated to the county by Gen. Horace W. Carpentier in 1902.

Small-Pox in Hospital.—Four cases of small-pox have appeared among the patients of the Metropolitan Life Insurance Company's Hospital at Mt. McGregor, near Glens Falls. Everyone in the hospital and its vicinity has been vaccinated.

Dispensary Needs Funds.—An appeal to the public has been made by the president and board of trustees of the Syracuse Free Dispensary for $5,500 required to meet the expenses of the institution until Oct. 1, 1915. During the last six months 8,723 treatments were given as compared with 6,198 treatments during the same period last year.

Plans for Public Health Education.—The State Department of Health, in extending its work in public health education, has planned, in addition to the pamphlets furnished to the schools, to prepare a considerable number of compact exhibits, consisting of a series of striking charts to be circulated throughout the schools of the state. In order to reach rural districts where the installation of the regular exhibits would be too expensive it has also planned to send out a railroad exhibit car with lectures and moving pictures connected with it, similar to the exhibits being used so successfully in California and Louisiana.

New York City

Personal.—Dr. and Mrs. William A. Griffith, Brooklyn, have sailed for San Juan, P. R.——Dr. and Mrs. Robert F. Weir have sailed for Nassau and Guantanamo, Cuba.

Bill to Abolish Coroner's Office.—The investigation of the coroner's office in this city, which has been conducted for several weeks, is nearing an end. Commissioner Wallenstein, who has been conducting the examination, announces that sufficient evidence has been collected to demonstrate the abuses of the office, and to form a basis for a bill which will be presented before the legislature at the coming session. It is purposed to substitute the system in operation in Boston.

Subway Crowding and the Public Health.—Health Commissioner Goldwater recently sent a letter to the public service commission asking that it take official notice of the overcrowding on the elevated and subway trains since it was his belief that such overcrowding greatly promoted the spread of infection by the "droplet method." To this communication the chairman of the public service commission has made reply showing that the public service commission has expended a large amount of money to prevent transportation congestion, that it has not jurisdiction over health matters, and that it is within the power of the health department to prevent the practices complained of, namely, the coughing and sneezing.

NORTH CAROLINA

New Medical Association Organized.—The Winston-Salem Medical Association was organized recently with an initial membership of nineteen.

County Needs Hospital.—Davidson County is in need of a hospital. The fraternal organizations of Lexington have contributed $5,000 toward the building and stock subscriptions are now being solicited throughout the county.

District Society Meeting.—The Eight District Medical Society held its semi-annual meeting at Winston-Salem, December 1: Dr. Joseph W. Ring, Elkin, was elected president, and Dr. William M. Jones, Jr., Greenboro, was reelected secretary. It was decided to hold the spring meeting of the organization at Elkin.

OKLAHOMA

County Society Organized.—Grant County Medical Society was organized at Medford, November 24, with an initial membership of twelve, and the following officers were elected: president, Dr. Samuel A. Lively, Wakita; vice-president, Dr. Harry A. Stalker, Pond Creek; secretary-treasurer, Dr. Chester H. Lockwood, Medford.

Unprecedented Prevalence of Diphtheria.—According to reports received by Dr. John C. Mahr, Shawnee, state commissioner of health, diphtheria is more prevalent throughout the state now than at any time since Oklahoma was admitted to the Union seven years ago. There is scarcely a county in the state entirely free. Rigid quarantine and general distribution of antitoxin have enabled the authorities to get the situation well in hand, and the outbreak will probably be checked soon.

Personal.—Dr. Thomas J. Jackson, Marsden, who has been seriously ill with septicemia, has recovered.——Dr. John L. Plumbee, Poteau, who fractured his arm and sustained other painful injuries in a runaway accident a short time ago, has recovered.——Dr. Percy A. Smithe, Enid, has sailed to join the Red Cross service in Austria.——Dr. Walter H. McKenzie, Enid, who has been seriously ill, is reported to be improving.——Dr. Surl E. Williams, Hydro, while feeding his team late at night, November 27, fell from the hay loft with a lantern in his hand, setting fire to the hay. The barn was destroyed and the team burned to death, and Dr. Williams suffered a fracture of the hip and several burns.——Dr. William C. Whittenberg, Stillwater, has purchased the Buffalo Park Sanitarium, Pawnee, and the institution will be opened about January 21 for the reception of patients.

OREGON

Personal.—Dr. and Mrs. Walter F. Williamson, Portland, have returned from abroad.——Dr. John Griswold, Helix, is reported to be seriously ill.

Trachoma on the Umatilla Reservation.—It is reported that government physicians find trachoma prevalent among the Indians of the Umatilla reservation, all ages being affected but the young being the greatest sufferers.

New Medical Society.—Klamath County Medical Society, the first medical organization in any county of southern Oregon east of the Cascades, was organized November 14, at Klamath Falls, with an initial membership of twelve. Dr. Lawson L. Truax, Klamath Falls, was elected president; Dr. John L. Harris, Bonanza, vice-president, and Dr. Floyd M. White, Klamath Falls, secretary-treasurer.

PENNSYLVANIA

Small-Pox Epidemic.—Jamestown, a small village near Greenville, has been placed under quarantine by the State Board of Health. Twenty-seven cases of small-pox have been reported.

Outbreak of Diphtheria in Allentown.—An outbreak of diphtheria (upward of fifty cases) in Allentown during the latter part of November, necessitated calling in the aid of the State Health Department. Investigation showed that in this instance the schools were not centers of infection, most cases being those of adults and children under 5. Carelessness in observing the modified quarantine rules was regarded as the cause of the spread.

Alumni Clinic Day at Erie.—The first annual meeting of the Northwestern Pennsylvania Chapter of Jefferson Medical College Association was held at Erie, November 14. During the entire day and evening, scientific and social meetings and clinics were held. A business meeting of the chapter was called for the afternoon at which the permanent organization was effected with the following officers: president, Dr. John W. Wright; vice-president, Dr. Frank A. Walsh; secretary, Dr. Harrison A. Dunn, and treasurer, Dr. Claude Weston Page, all of Erie. The membership of the chapter includes all eligible Jefferson graduates who are residents of the counties of Crawford, Erie, Forest, McKean, Mercer, Venango and Warren.

Personal.—Dr. Robert W. Ramsey, Chambersburg, is reported to be seriously ill at his home.——Dr. Albert C. Lamade, Williamsport, was operated on for appendicitis in the German Hospital, December 1, and is reported to be doing well.——After fifteen years' service as a member and president of the Board of Health of Norristown, Dr. Alfred H. Read resigned December 1, and Dr. Willis R. Roberts was appointed his successor.——Dr. Theodore L. Hazlett, Pittsburgh, has been appointed an assistant surgeon in the third Russian Red Cross Unit to sail for Europe this month.——Dr. Johnston McLanahan, Chambersburg, who has been seriously ill with gastritis, is reported to be convalescent.——Dr. William McKenzie, Conshohocken, was seriously injured in a collision between his automobile and a trolley car, recently.——Dr. Benjamin J. Millard, Mount Carmel, while cranking his automobile, fractured his left hip.

Philadelphia

Cattle Quarantine Still in City.—A new order lifting the foot-and-mouth disease from fifteen different counties, and explaining the conditions under which cattle may be imported was issued December 11, by the state live stock and sanitary commission. Philadelphia County is still under ban.

Schools to Teach Care of Babies.—At the suggestion of the Child Federation, the Board of Public Education has established a course for little mothers in the seventh and eighth grades of the public schools. There are classes of instruction now operating in sixteen and seventeen schools under

the Child Federation volunteer corps of teachers, and the latest development is a series of lectures in the Stock Exchange Building by Dr. Howard Childs Carpenter, instructing the teachers.

Discuss Hospital Plans.—Plans for the new Philadelphia General Hospital were discussed at a subscription luncheon given by the City Club to representatives of city councils, the County Medical Society and the Civic Club, December 12. Dr. Richard H. Harte of the department of health and charities outlined the proposed plan for spending one million dollars a year during the next five years for the erection of an entirely new group of buildings on the present site of the Philadelphia Hospital. Addresses were made by Dr. David Riesman, a member of the committee on rehabilitation of the hospital, and Dr. William D. Robinson, president of the County Medical Society.

Personal.—Dr. Thomas McCrae has been made consulting physician to the Girard College.——Dr. William S. Newcomet has been appointed radiotherapist to the Jefferson Hospital. ——Dr. George S. Crampton has been elected attending surgeon to the eye department of the Pennsylvania Hospital, vice Dr. Peter N. K. Schwenk, who resigned November 30, after twenty-three years of service. Formal ceremonies were held in honor of Dr. Schwenk at which he was presented with a silver loving cup by members of his staff and was also given flowers by the social service department and school nurses, and numerous tokens of esteem from other persons connected with the hospital.

SOUTH CAROLINA

Personal.—Dr. W. Thad. Hunt, Townville, is reported to be critically ill with nephritis in the Anderson County Hospital.——Dr. W. R. Bethea, who has been seriously ill with pneumonia at the Florence Infirmary, is reported to be improving.

New Society Organized.—Physicians of Calhoun County met at St. Matthews December 3, and organized the Calhoun County Medical Society electing the following officers: president, Dr. Lucius B. Bates, St. Matthews; vice-president, Dr. Asa P. Trawick, Cameron; secretary-treasurer, Dr. Thomas H. Symmes, Jr., St. Matthews.

Society Indorses Health Officer.—The Greenville County Medical Society adopted resolutions recently indorsing the work of the County Board of Health and of Dr. S. J. Taylor, the county health officer, requesting the county delegation to appropriate at least $3,000 for the work of the board of health for the coming year and appointing a committee of three to meet the county delegation and discuss the health questions involved.

District Physicians Meet.—The annual meeting of the Fourth District Medical Society was held in Seneca, November 24, and the following officers were elected: President, Dr. Joseph S. Stribling, Seneca; vice-president, Dr. Lawrence G. Clayton, Central; treasurer, Dr. James R. Young, Anderson. Easley was selected as the next place of meeting and the date of the meeting was changed from the second Tuesday in November to the fourth Tuesday in September.

VIRGINIA

New Organization of Colored Physicians.—The Hippocratic Medical Academy was organized at Roanoke, November 3, with the following officers: president, Dr. George E. Moore; secretary, Dr. A. W. Harris, Jr.——Magic City Medical Society at Roanoke: president, Dr. S. F. William; secretary, Dr. E. D. Downing.

Alumni Organized.—The Medical Alumni of the University of Virginia met in Richmond, November 11, and organized an alumni association, electing Dr. Hugh H. Young, Baltimore, president; Dr. Richard H. Whitehead, University, Va., vice-president, and Dr. Thomas V. Williamson, Norfolk, secretary-treasurer.

Monument to Confederate Surgeon-General.—The Association of Medical Officers of the Army and Navy of the Confederacy has planned a beautiful memorial to be erected over the grave of Dr. Samuel Preston Moore, Surgeon-General of the Confederate Army, who is buried at Hollywood Cemetery, Richmond. Other associations are cooperating in the erection of this memorial.

Personal.—Dr. James Allison Hodges, Richmond, has been elected president of the North Carolina Society of Richmond. ——Dr. John F. Ragland, Jr., Centralia, recently appointed coroner of Chesterfield County, who has been seriously ill with typhoid fever, is reported to be improving.——Dr. Stonewall J. Gill, Roanoke, underwent an operation at the Lewis-Gale Hospital in that city, November 25.——Dr. Kenneth B. Graves, bacteriologist of the State Board of Health, has been elected city bacteriologist of Richmond.

GENERAL

Conference on Child Labor.—The National Child Labor Committee has called a conference of all interested in the protection of children to meet in Washington, January 5 and 6, to emphasize the need of a federal child labor law and to discuss the question whether or not the federal government should intervene to prevent the conditions of child labor now prevailing in twenty-one states of the Union, where the employment of children under 14 years of age in mills and canneries is legal.

Fenger Memorial Fund.—The Directors of the Fenger Memorial Fund announce that $600 has been set aside for medical investigation in 1915. The money will be used to pay all or part of the salary of a worker, the work to be done under direction in an established institution, which will furnish the necessary facilities and supplies free of cost. It is desirable that the work undertaken should have a direct clinical bearing. Applications giving full particulars should be sent to Dr. Ludvig Hektoen, 629 South Wood Street, Chicago, before Jan. 15, 1915.

Sanitarians Elect Officers.—At the annual meeting of the American Public Health Association held in Jacksonville, Fla., December 1 to 4, the following officers were elected: president, Prof. William T. Sedgwick, Boston; vice-presidents, Drs. Charles J. C. O. Hastings, Toronto, Ont.; Juan Guiteras, Havana, Cuba, and Charles E. Terry, Jacksonville, Fla.; members of executive committee: Surgs. J. F. Anderson, U. S. P. H. S.; John H. Landis, Cincinnati, and Alfredo Dominguez, Havana, Cuba; secretary, Dr. S. M. Gunn, New York City, and treasurer, Dr. Lee K. Frankel, New York City. Honorary membership was conferred on Dr. Eduardo Liceaga, for many years president of the Bureau of Health of the City of Mexico. Rochester, N. Y., was selected as the place of meeting for 1915.

Hookworm Campaign in the Canal Zone.—The International Health Commission of the Rockefeller Foundation has established laboratory stations for the diagnosis and treatment of hookworm at Panama, La Chorrera and Bocas del Toro. The work was organized by Dr. L. W. Hackett of the commission, and according to the *Canal Record*, October 28, out of the first thousand men, women and children reporting at the La Chorrera laboratory more than 700 were found to be harboring hookworm. An effort is being made to induce every inhabitant of this village of 4,000 to submit to examination for hookworm, and circulars in simple language have been distributed and house-to-house visits and investigations have been made. Treatment is free, but not compulsory, although the work is carried on at the request and with the cooperation of the Panama government, and pressure may be brought to bear to make the campaign a thorough one. The establishment of laboratories in Panama is in pursuance of the plan of the International Health Commission for a world-wide campaign of health work in countries requesting the cooperation of the commission. Panama was one of the first countries to invite assistance. Great Britain has already solicited cooperation in behalf of her tropical possessions and a French and Dutch colonial service and an oriental service are also under consideration.

WAR NOTES

Dr. Crile Takes Charge of Division in American Ambulance at Paris.—Dr. DuBouchet, in charge of the American Ambulance at Neuilly, has placed at the disposal of Dr. G. W. Crile one division of the hospital, consisting of 150 beds. Other surgeons and nurses will also go from the Lakeside Hospital, Cleveland. The party, which will sail December 30, includes also Dr. Samuel J. Ledbetter, resident surgeon of the Lakeside Hospital; Miss Agatha Hodgins, chief anesthetist, and Miss Iva Davidson, operating-room nurse.

American Ambulance Surgeons Daring.—The American Ambulance Corps of Paris has done much daring work at the front, but so far there has been not a single casualty among the staff, although the life-saving work has been carried on close to the firing line. The British Ambulance Corps has not been so fortunate, as one ambulance near an American Ambulance car, was struck by a shell and demolished, its entire crew being killed or wounded.

Red Cross Work Changes.—The American National Red Cross, at its tenth annual meeting in Washington, December

9, readjusted its European war work. Hereafter, the society will not solicit contributions for non-combatants, but will limit its solicitations to funds for relieving the sick and wounded in the armies at war. It will transmit, however, non-combatants' relief funds to the European Red Cross organizations when the donor designates the country to which the funds are to be sent.

Aid for the Austrian Red Cross.—Dr. Adam P. Leighton informs us of the receipt of a letter from Dr. Oskar Frankl, editor of the *Gynäkologische Rundschau* of Vienna, regarding the work of the Austrian Red Cross. Dr. Frankl states that doctors have given up their accustomed clinical work and are now military surgeons in service of the Fatherland. As with other countries, the Red Cross is in need of funds. Anyone desiring to contribute for this cause may send their contributions direct to Dr. A. P. Leighton, 192 State Street, Portland, Maine, or Oskar Frankl, Franz Josefs-Kai 17, Wien, I., Austria.

More Clothing and Supplies Sent to Europe.—The American Red Cross shipped to Europe on December 13, 401 cases of hospital garments, hospital supplies, blankets, shawls and clothing for the women and children of the war zone.——To France were sent 89 cases of hospital garments, women's and children's, 9 cases of absorbent cotton, several cases of iodin and antiseptic tablets.——To the German Red Cross were sent 71 boxes containing hospital garments, women's and children's clothing, hospital linen and absorbent cotton and bandages.——To the Austro-Hungarian Red Cross were sent 71 cases of hospital garments and clothing for women and children, and 20 bales of absorbent cotton.——To Rotterdam, there were sent for the use of Belgian refugees in Holland, 94 cases of clothing for men, women and children, overcoats, 3,000 blankets and 1,400 shawls, and 65 cases containing nearly 4,000 blankets for the Belgian Relief Committee for Belgium.

Aid to Belgian Physicians and Surgeons.—An appeal made by Sir Rickman J. Godlee of London, chairman of the committee organized in Great Britain in aid of Belgian physicians and surgeons, has resulted in the organization of an American committee which will accept subscriptions in money and surgical or pharmaceutical supplies and distribute them to the best of their ability among the Belgian sufferers. The appeal is accompanied by a contribution by Prof. C. Jacobs of the University of Brussels on "The Position of Belgian Doctors and Pharmacists" and a letter by Sir Gilbert Parker to the Chicago *Tribune*, both of which explain most clearly and vividly the needs of the Belgians.——Dr. Frank F. Simpson, 7048 Jenkins Arcade Building, Pittsburgh, has consented to act as treasurer to the American Relief Committee which consists of Drs. William L. Rodman, Philadelphia; Charles H. Mayo, Rochester, Minn.; John M. T. Finney, Baltimore; George H. Simmons, Chicago; Thomas L. Stedman, New York City; Edward W. Taylor, Boston; Franklin H. Martin, Chicago, and Howard Canning Taylor, New York. Contributions should be sent to the treasurer, Dr. F. F. Simpson.

Work in American Ambulance at Paris.—Dr. Blake, in a letter to an American correspondent states:

"In view of the great number of surgeons who are applying and who are coming over, I think it would be wise for you to give out a statement to be published throughout the medical press that the Ambulance of the American Hospital in Paris is in reality a hospital of between four and five hundred beds, situated in the environs of Paris at Neuilly, that the staff at present is full, and that only from time to time new men will be needed to fill the vacancies by men leaving. On account of the fact that nearly all the patients are French, and that histories of the cases in French are required by the government, it is highly desirable that applicants should be able to speak French.

Further, that extensions to the work of the Hospital carried out in other places than the neighborhood of Paris for the immediate present, are being manned by complete units leaving America as such, and consequently their personnel is to be recruited before leaving.

Further, in order that applicants may get information more readily, Dr. Gibson and yourself have been requested by the Staff of the American Ambulance to act as a Committee to whom applications should be made."

In accordance with the above request made in a letter from Dr. Joseph A. Blake to Dr. Hugh Auchincloss, dated Paris, Nov. 14, 1914, applications for service of any kind—doctor, nurse, orderly, ambulance driver—in the American Ambulance or its units will be received by Dr. Charles L. Gibson and Dr. Hugh Auchincloss, acting as a committee appointed by the medical board of the American Ambulance. All applications should be made out so as to cover fully, and in detail, all the information requested in the application form, which Dr. Hugh Auchincloss, 178 East Seventieth Street, New York City, will send to any one requesting it. Notices will then be sent directly to any applicant when, on hearing from the American Ambulance in Paris, it may be deemed by the committee that his or her services may be made use of. It should be remembered by all applicants that a passport is an absolute essential, if going abroad, and that the new regulations for securing one are much more stringent than formerly, and that a new form of application blank has been adopted by the government within the past month.

LONDON LETTER

LONDON, Nov. 27, 1914.

The War

The uniformly septic condition of the wounds which have come under treatment in the hospitals, and the failure of the modern "aseptic" treatment, have caused a proposal to revert to the old antiseptic treatment. The latter is now in the ascendency. The importance of immediate disinfection of wounds is recognized and, following the example of the French, a small quantity of iodin is being supplied to each man to be used as soon as a wound is inflicted. Every effort is being made to preserve the health of the troops in the field, so far with complete success. We have had no cases whatever of cholera and few of typhoid. Divisional sanitary companies consisting of sanitary inspectors and men of the scavenging class are being prepared to be sent to the front. A sanitary committee which was sent out by the government has reported that nothing could exceed the sanitary accommodation of the actual trenches. With the advent of the frost there are some cases of frost bite, dysentery, rheumatism and pneumonia. It is remarkable that cases of illness are so few, considering that the men have often to stand ankle deep all night in slush. The motor ambulances are proving invaluable in the removal of the wounded from the field of battle, but the conditions of present-day warfare have rendered immediate succor difficult and often impossible. Horse ambulances are pushed forward during an engagement as near the firing line as is consistent with moderate safety, and the wounded are placed in them from the regimental aid posts behind the firing line. In the course of the protracted semisiege-like battles which are characteristic of this war, it is usually only under cover of darkness that it is possible for the wagons to approach the aid posts, and the collection of wounded is accordingly begun at dusk.

Having collected the wounded, the wagons are driven to the headquarters of the field ambulance, which may be two, three, or four miles in the rear; here the patients are fed on hot beef tea, soup, tea, milk or other sustaining food. Their wounds are redressed, if necessary, and operations of urgency undertaken. In some cases it may happen, as at the battle of the Aisne, that the headquarters of the field ambulance are so near to railroads that the wounded can be transferred straight to ambulance trains or to clearing hospitals in which they can await the arrival of such trains. But as a rule this is not the case; there is nearly always a gap of some miles separating the headquarters of the field ambulances and the nearest available point reached by ambulance trains. It is this gap which the motor ambulances are employed to bridge, and most excellently they do it. Before they appeared, all sorts of shifts were necessary. Whenever the troops advance (or retire) the field ambulances are required to advance (or retire) with them. It is essential, therefore, that the field ambulances should retain their patients for as short a time as possible, for it is obvious that they cannot move with the troops if they are encumbered with hundreds (or even scores) of wounded patients. Thus the motor ambulances, working rapidly backward and forward between the railhead and the field ambulances, achieve a double object: they ensure speedier and far more comfortable transit for the wounded to those places where their wounds can best be treated and healed, and they enable the field ambulances to retain their full mobility and so serve most efficiently the needs of the troops among whom further casualties may occur. The motor ambulances run so speedily up and down that the field ambulances are never allowed to get choked up with wounded, even after a big engagement. If the order comes to march before all the wounded have been taken away in the cars, all that is necessary is to send word to the latter that the patients are lying in a certain house or farm and to leave one or two orderlies behind to look after them until the motor ambulance arrives.

Casualties Among Army Surgeons

The heavy casualties among army surgeons continues. The list for the past week is one killed and five wounded.

In the present war their work is very dangerous. To succor the wounded where they fall they must travel long distances up and down a long front, exposing themselves to the enemy's fire. It is now beginning to be realized that the wounded are safer lying where they fall, provided some one will apply the first field dressing. To carry wounded men or allow slightly wounded to walk to the aid posts during an engagement exposes them to the grave risks of additional wounds and means losses among the medical personnel. It is better that wounded men, having received first aid, should lie until darkness enables them to be moved with safety.

Gas Gangrene

An important report has been made to the government on emphysematous gangrene (which, as previously stated, is rife among the wounded) by Sir Anthony Bowlby, consulting surgeon to the forces, and Dr. J. S. Rowlands, a bacteriologist. A bacillus was isolated which, when inoculated into a guinea-pig caused fatal gangrenous cellulitis. Examination of a culture at the Lister Institute by Dr. C. J. Martin and Dr. Arkwright inclined these observers to the view that the organism is identical with one that for some time was confused with that of malignant edema, known as the bacillus of Ghon and Sachs. This organism was originally obtained from a case of gangrene in the human subject. There are ten different organisms that have been isolated from cases of gas gangrene in man, all of which are closely allied and have the common characteristic of being anaerobic spore-bearers. From other cases in the clearing hospitals at the front several more organisms of this group have been isolated and have been sent to the Lister Institute for confirmatory diagnosis. A sample of earth from a trench was also examined. The inoculation of a few drops of water, in which this earth had been shaken up, into a guinea-pig killed the animal in eighteen hours. Post mortem a similar gangrenous cellulitis was found. The animal was also found, like the guinea-pig inoculated from the gangrenous culture, to be infected throughout with a spore-bearing anaerobic organism belonging to the same group. It is reasonable to conclude, therefore, that the gangrene found among our wounded soldiers is directly due to infection introduced at the time of the wound, and this is especially likely to occur if muddy clothing has been carried in by the projectile or if earth has been carried in the explosion. It is solely due to infection from the soil and is in no way related to sloughing phagedena, or so-called "hospital gangrene." The onset is characterized by swelling of the injured part, and the gangrene seems especially liable to occur in connection with that swelling of a limb which is due to extravasation of blood in the subcutaneous tissues and intermuscular planes. It seems that interference with the circulation either by extravasation of blood or by tight bandages has a marked influence. In the early stages the patient complains of severe pain, which is perhaps due to tension, the result of the swelling, but in the later stages the affected area becomes completely numbed and insensitive. The edges of the wound are generally ragged and sloughy, and a considerable quantity of blood-stained serum constantly exudes and soaks the dressings. This discharge emits a characteristic and most offensive odor, which is so marked as to be almost diagnostic. The skin, if not previously discolored by extravasated blood, assumes a dark purplish or slate-colored hue. In the vicinity of the wound it changes subsequently to a greener color. The swelling extends coincidently with the change of color, and a few hours later the skin becomes nearly black, and finally forms a black, leathery slough. Beyond the area of discoloration the limb is swollen with gas and fluid exudation, and an emphysematous crackling can be elicited on pressure with the hand. This may spread to a distance of as much as a foot above and below the actually gangrenous area, and so rapid is the extension of the gangrene that the whole of the lower extremity may be completely mortified before the end of the third day after the infliction of the wound. The following practical conclusions are drawn:

1. All tight bandages, and especially those applied at the first field dressing, should be avoided. Shell wounds are so often followed by so much interstitial hemorrhage that the part swells and the bandage rapidly becomes tighter and interferes with the circulation. Consequently, many bandages have to be cut within a few hours of their application.

2. In many cases it is necessary to relieve the tension by incisions and drainage, and the opportunity should be taken to wash the wounds thoroughly with an antiseptic. Hydrogen peroxid is one of the best. Great care should be taken to remove portions of clothing, as these contain the infective agent. Shattered fragments of bone and pieces of shell or gravel should be taken out.

3. Amputation may often be successfully performed through tissues made emphysematous by gas but not yet gangrenous.

4. The group of anaerobes causing gangrene are spore-bearers, and spores (especially of this group of anaerobes) are difficult to kill by any antiseptic solution or even by boiling. Consequently, in order to sterilize instruments and other things that have been infected, other measures are required. These are: destruction of blankets and clothing soaked by the discharge, heating in an autoclave at a temperature of 120 C. (248 F.), or boiling for an hour in a solution of phenol (carbolic acid) 1:20, or compound solution of cresol, 1:10.

5. Where possible it is advisable to isolate patients under treatment in hospitals, and this is all the more necessary on account of the bad smell which is inseparable from the condition.

Effect of the War on the Medical Profession

At the General Medical Council (the body of which controls examinations and registration of physicians) the president, Sir Donald MacAlister, in his address referred to communications which had been received from several licensing authorities as to the propriety of modifying or suspending some of the existing regulations in the case of students whose regular course of study might be interrupted by military service. He said it was the duty of the council to maintain such a standard of proficiency as would guarantee the possession by candidates of the knowledge and skill requisite for the practice of the profession. Multitudes of their professional brethren had nobly offered themselves for service with the troops at home and abroad; many had already laid down their lives in the performance of that humane duty. The toll of war was not yet complete. They must face the certainty that before long the ranks of the profession would be sadly depleted. Ample reserves were necessary to supply the places of those who fell on the field of honor. Those reserves would be constituted by those whom they were now admitting to the status and privileges of registered physicians. They would best honor the memory of the fallen and safeguard the welfare of the forces and the people if they did all in their power to secure that the men who entered the profession were as fully and as efficiently trained as their predecessors. The need for efficient physicians in the field and at home was not less urgent than the need for efficient soldiers and sailors. He had felt it his duty to press this consideration on senior students who, though they had nearly completed their curriculum, were ready to forego the prospect of early qualification and to enroll themselves straightway in the combatant forces. It was currently reported that owing to the war the number of the students of all years enrolled for the present medical year was much below the average. If that were true, the risk of a serious shortage in the future supply of physicians would appear to be imminent.

PARIS LETTER

PARIS, Nov. 26, 1914.

School for Cripples

During the four months that the war has lasted, our hospitals have discharged numbers of crippled soldiers. What is going to become of these young men, some scarcely over 20? They cannot be abandoned to public charity. All means should be used to make them capable of practicing a trade. The mayor of Lyons, M. Edouard Herriot, reminds us that for a long time the Scandinavian countries have concerned themselves with the problem of the training of cripples. In 1872 the Danish philanthropist, Hans Knudsen, founded at Copenhagen his celebrated orthopedic policlinic, and institutions of the same kind have been opened at Helsingfors, Stockholm and Christiania. M. Herriot visited some months before the war, the training-school for cripples and victims of industrial accidents founded in Charleroi, Belgium, by the province of Hainaut in 1906 after the passing of the Belgian law on compensation for industrial accidents. The workshops of the school were directed by a physician whose duty it was to find out the suitable trade for each pupil when he enters. One might see, for example, a man who had lost both forearms enabled to make brushes by means of a special apparatus. One of the stumps was fitted with a mass of steel, serving as a hammer, the other with a leather pad furnished with a magnet for placing the nails. The school had its prothesis workshop where the physician's ingenuity was taxed by the most various problems. Seven sections were in regular operation: a school of shoemaking, a school

of bookbinding, a school of harnessmaking, a school for the cutting and making of clothes, a school of basketmaking, a school for making matting and a school of bookkeeping. The instruction was both theoretical and practical. The cutting school in particular did most acceptable work. The institution could not supply the demands for work people. The basketmaking section also was overwhelmed with orders. Well-organized canteens nourished cheaply this little community of workers saved from want and idleness. Their intellectual development was the object of the same care as their physiologic reeducation. Since the present war renders some such measure urgent, the city of Lyons, which is particularly rich in scientific and industrial resources, has volunteered to found without delay, the first school for cripples in France.

An Appeal of the French Sanitary League

The object of the Ligue sanitaire française, whose president is Dr. Raphael Blanchard, professor of parasitology and of medical natural history at the Faculté de médecine de Paris, is to disseminate the principles of general hygiene. The league believes that under the present circumstances it has a special urgent task to fulfil. It is well known that after all wars the devastated regions are generally subjected to another scourge, that of epidemics (typhoid fever, choleriform infections, dysentery, etc.). To prevent this new calamity, the league has decided to send out a poster to the 6,000 communes affected by the German invasion indicating the most urgent hygienic precautions; for instance, against careless burial of bodies, pollution of springs and wells, and epidemic diseases with information about how they are spread and how they may be avoided. This notice will be posted in all communes. Moreover, wherever the mayors request it, public conferences will be held and it may be that antiseptics will be distributed free on request. The league appeals to all its friends to aid (1) by subscriptions of money, (2) by gifts of antiseptics, (3) by the loan of automobiles and (4) by any other methods. Donations may be addressed to the Secrétariat général de la Ligue sanitaire française, 72, rue de Rome, Paris.

Sanitary Postal Cards

The families of sick and wounded soldiers have complained very justly that they receive only much delayed and very insufficient information. The minister of war has endeavored to meet this complaint as far as possible. Hospitals have been ordered to furnish lists of names of the sick and wounded to be sent to relatives of patients. Moreover, a sanitary postal card has been devised which is to be sent to the families with the signature of the head physician at the time of the admission of the soldier to the hospital and thereafter each week as long as the patient remains. Unfortunately, the heads of too many hospitals of the territorial or reserve army are unfamiliar with military discipline and up to the present they have tended to regard these lists as tiresome administrative red tape which could, in any event, be postponed to a convenient season. Very precise and peremptory instructions have just been given by the minister of war so that this duty may no longer be shirked.

BERLIN LETTER

Berlin, Nov. 7, 1914.

Experiences of the Latest Military Surgery

In a hospital in northern France, where the army headquarters are also situated, the Leipsic surgeon, Professor Payr, delivered a lecture a few days ago on the experiences which he had so far had in the present campaign. He said that military surgery has to reckon with an especial difficulty because the injured are pressed on the surgeons in such numbers that the surgeons are not physically capable of meeting the demands on them. The surgeon in the field must, as has always been the principle of our German sanitary service, work as simply and surely as possible. He must dismiss the wounded that he does not keep under his care in such condition that they may be transported further without danger from any possible accident. In this case, the surgeon in the war lacks any self criticism of his results because he loses sight of his patients in the great majority of cases immediately. However, previous experiences have already given some definite guiding principles. Among them belongs, for instance, the principle that surgeons should not operate too early.

VARIOUS KINDS OF WOUNDS

The wounds differ according to the kind of projectile and according to its effect. They concern infantry bullets, shrapnel, pieces of grenade or shells. The modern French infantry bullet consists of comparatively soft materials and is easily deformed. This occasions the hook form in which it is generally found in the wound. Nothing can be said with reference to the shape of pieces of grenade and shells. Something quite new which has been introduced with this war is the flying arrow. With dramatic vivacity Payr described the first experience of our troops with this weapon. Above a column of marching infantry there appeared a hostile aviator. While it was noticed that he was throwing no bombs, a man suddenly cried out, "I am hit." Although surgical examination at first showed only an insignificant wound on the left shoulder, the patient bled to death under the hands of the surgeon. Necropsy showed that the arrow had pierced the upper fossa of the clavicle, the left lung, the diaphragm, the spleen, the thigh and the pelvis, and had made its exit from the body at the knee. The arrow was found in the trousers of the dead man. It was a pointed piece of steel with the strength of a pen holder, the posterior half of which had been hollowed out quadrangularly so that in falling the heavy point was always downward. A number of such arrows hang in a perforated board under the aeroplane from which they can immediately be released by the pressure of the foot of the aviator, so that a certain scattering and volley-like discharge is secured. At an elevation of 1,500 meters (about a mile), from which they are generally thrown they reach the earth with a final velocity of 200 meters per second, which corresponds to the velocity of one of the older rifle balls. In cases like that described, the effect was fatal, but wounds from the aeroplane arrows are rare.

In describing the injuries of tissues and organs, the lecturer showed that the blood-vessels are cut through by the modern infantry bullet with a smooth wound. The number of injuries to blood-vessels in this war is larger than has been anticipated. The muscle swells up after a few seconds until its counterpressure is great enough to hinder the further exit of blood from the open vessel. Moreover, the nerves have no longer time to yield to the infantry bullet but are smoothly cut across. As far as concerns the serious injuries of bone, it has been shown that shot wounds of the joints take a comparatively favorable course as the result of spongy consistency of the bones about the joints, while the long bones with their ivory-like hardness suffer severely at the distances with which we have to reckon with our far-carrying weapon, and are splintered at a distance of from 1,600 to 1,800 meters. In the internal organs the tendency of the bullet to cause rupture comes into account if, like the kidney and bladder, they are filled with fluid. A peculiar phenomenon is wound fright, a condition in which, even with a relatively slight wound, the wounded show a very serious appearance and a small pulse.

Wounds of the head are especially frequent in modern warfare as a result of the extensive employment of protecting trenches. These wounds may be divided into perforating, tangential and furrowed. The perforating wound is the milder one. A man could be shown who had received a shot transversely through the brain but who yet was able to answer any questions, although with some delay. Sometimes in such cases an abscess of the brain occurs in consequence of infection, but it is possible to reach this by operation, and the case is by no means hopeless. On the other hand, the tangential wound in which the bullet has ploughed an open furrow in the skull shows almost without exception a very severe wound which is dangerous on account of splinters of bone and infection. Here energetic operative interference is generally necessary and, if carried out at the right time, affords in many cases, even with deep wounds of the brain, the prospect of complete recovery. Wounds of the neck, in spite of the crowding of important vital organs in a small space, pursued an astonishingly favorable course in the majority of cases. In wounds of the larynx, tracheotomy was often performed at the field hospital on account of the danger of suffocation. Wounds of the thorax permit almost the best prognosis. Smooth penetrating wounds through both lungs were in many cases so little dangerous that the wounded could already be transported after from ten to fourteen days, even if they had coughed up blood for a couple of days. To be sure, in wounds of the heart and its auricles the progress of surgery, which has made it possible in times of peace to suture such wounds, can be applied only exceptionally in time of war. Wounds of the abdomen were characterized by the lecturer as a disputed territory. The South African War afforded the experience in contrast with former views that it is better not to undertake operative treatment on abdominal

wounds immediately but to postpone it. Multiple perforations of the intestines pursued a favorable course if the wounded were allowed to remain quiet for a week without eating or drinking.

THE WORK OF MILITARY SURGERY

The entire work of military surgery consists in the first aid to the wounded, the final care of the wound and the after-treatment. The first aid consists chiefly in the stopping of hemorrhage. In reference to this, the lecturer remarked that the ligature of arteries had been found to be especially important in this war. The prevention of infection also belongs to the first aid. Brilliant results have been secured by the small bandage of germ-free gauze which the soldiers themselves apply in the field or which is applied by their comrades. The third task of first aid treatment is preparing the wounded for transportation. Here the strong cars introduced into the sanitary service do excellent work. The wounded man must be dismissed in such a condition that the surgeon is convinced that no further accident can happen to him on the journey. Broken bones must be fixed in plaster or with splints. The surgeon must in such cases often improvise his apparatus. Very good splints can be made from the limbs of trees and be covered with straw when no other material is at hand. In the final treatment of the wound, the principle has been adopted not to operate too hastily so that the aseptic healing which has already begun may not be interrupted. No importance is attributed in general to the removal of the bullet from the body unless it is necessary.

The shrapnel bullet often carries pieces of clothing into the depths of the wounds on account of the slight force with which it reaches its mark. In from 70 to 75 per cent. of cases, according to the experience in this war, shrapnel wounds resulted in suppuration. Also pieces of grenades with their ragged edges often carry foreign bodies into the flesh. Among the complications which may result, especially in artillery wounds, is the not very rare occurrence of tetanus. The attempt has been made to prevent this by the injection of tetanus serum. Also the injection of tetanus serum into the spinal canal, the nerve centers and the circulation has given successful results in the treatment of developed cases of this fearful disease. As a rule, the simple wounds of the soft parts by infantry bullets pursued a favorable course. In many cases those who had been struck by these bullets were fit for service in the field a week later. Wounds of the joint with infantry weapons pursue a favorable course if splints are applied at the right time. Wounds of the long bones are often much more serious from the distances with which we are concerned generally in this war. They are the crucial cases of our hospitals. It has been shown that delay in operation in these cases is often undesirable, but that an immediate free opening of the gunshot fracture is the proper treatment. Naturally, surgery of the present day, which has become eminently conservative, no longer takes the stand as shown by the distinguished Baron Larrey, chief surgeon of Napoleon I, who believed that he was giving the best help to the wounded if he amputated the wounded limbs. But it has been shown, on the other hand, that military surgery of the present day, in some rare cases, has probably become too sparing of amputation. Wounds of the skull as well as those of the neck and chest pursue a relatively favorable course, but the furrow-like wounds are dangerous. Bombs from aeroplanes are peculiar in their action. The wounded much oftener show burns from these than from the grenades and the splinters produce an especially sharp dagger-like wound canal. Payr closed with praise of the arrangements for moving the wounded, especially the luxuriously equipped hospital trains.

BERLIN, Nov. 16, 1914.

The Number of Casualties

The lists of names published in the *Deutsche medizinische Wochenschrift* show that to date the German army medical corps has lost 287 members. Among them, 94 were killed on the field of battle, 12 have died, 90 have been wounded, 27 taken prisoners and 64 are missing, which probably means that they are prisoners. Undoubtedly the number of actual losses is still greater. The facts naturally become known slowly by the troops and are still more slow in reaching publication. It is especially to be regretted that, on the one hand, so many have fallen in the exercise of their professional work and, on the other hand, that so many physicians have been taken and are being held prisoners.

The Iron Cross for Physicians

In contrast with these sad features of the war, we must note that the number of decorations for gallantry in the field (the Iron Cross of the first and second class) awarded to German physicians is extraordinarily great. As is shown by the official communications, these are given not only in appreciation of exhausting and successful professional work but also as a recognition of bravery in the face of the enemy. Many physicians have for hours tended the wounded in the front ranks during a rain of bullets. Many have taken their charges out of hospitals which were exposed to a shower of the enemy's bullets, and were partly on fire. It is easily understood that many of our colleagues lost their lives in this way.

Death of Weismann

August Weismann, zoologist and biologist, died November 6 after a short illness, at the age of 81. He was one of the most distinguished German naturalists of the present period, and had taken first place among the investigators of the Darwinian theory of evolution. Originally he studied medicine. After passing his state examination, he was for a time an assistant at the medical clinic at Rostock. Then he went to foreign countries for further practical education, and his interest in zoology led him gradually to devote himself exclusively to this field. He became a pupil of Leuckart at Giessen and in 1863 he joined the faculty of Freiburg in zoology and comparative anatomy, and in spite of frequent honorable calls elsewhere he never left this university. Weismann devoted his scientific lifework almost exclusively to the grounding and further development of the theory of the evolution of species, and in this field again he preferably devoted himself to one of the most difficult and disputed biologic problems, that of heredity. Darwin had adopted as a temporary hypothesis for the explanation of the inheritance of peculiarities the theory of pangenesis, which in its basic principles goes back to Hippocrates. This theory teaches that from all parts of an organism material contributions pass into the juices of procreation so that the latter, to a certain extent, consist of a concentrated extract of the former. He assumed in this that a living organism had the power of transmitting to its progeny those peculiarities which it had acquired for the first time in the course of its individual existence. He regarded this as an essential factor in the further development of the characteristics of a species and the formation of new species.

The numerous difficulties which the Darwin theory of heredity had encountered led Weismann to more or less successful researches to remove its defects and particularly to secure comprehensible morphologic ideas of the manner in which the elements passing from the entire organism to the sexual cells are to be regarded as active. One of the most important results of these investigations is the theory developed by Weismann—in conjunction with Jäger, Galton and other investigators—of the continuity of the germ plasm. Whatever one may think of its explanatory value, this theory has been, at any rate, very fruitful and rich in results by the stimulus which it has exerted, not only on biology, but also on pathology, natural philosophy and other sciences.

On the basis of this theory, Weismann reaches an exactly opposite result to that of Darwin with regard to inheritance of acquired characters, since Darwin found no difficulty in assuming the possibility of extensive modification of the germ elements. In contrast with this, Weismann declared that the endogenous structure of the germ plasm, with which the function of heredity is connected, is unchangeable and stable. All those characters which the individual in the course of his life has acquired from external sources—changes of organs, diseases, deformities, etc.—cannot, according to Weismann, be transmitted to the offspring. In numerous publications Weismann expounded his theory, which provoked long discussions in the world of science, lasting even to the present time. He published in 1892 "Das Keimplasma, eine Theorie der Vererbung," and in 1902-1904, "Vorträge über die Deszendenztheorie." Of more popular interest are two inspiring productions "Ueber die Dauer des Lebens" (1882), and "Leben und Tod" (1884)—"Length of Life," and "Life and Death"—in which he sought to demonstrate that the length of life of individuals is the result of natural selection, a phenomenon of adaptation which has been produced by the advantage which it affords for the maintenance of the species.

August Weismann was not only a noted and thorough investigator but, what is not always associated with this, he was an excellent university teacher who enjoyed the highest regard of his hearers because of the wonderful clearness and distinctness of his address.

Marriages

Joseph Augustus Blake, M.D., to Mrs. Katherine Alexander Duer, both of New York City, in Paris, France, November 28.

Leroy Thomas Geer, M.D., Syracuse, N. Y., to Miss Adele May Spencer of Los Angeles, at Auburn, N. Y., November 13.

Leroy Francis Heimberger, M.D., Wei Hei Shien, China, to Miss Louisa Corbett of Chefoo, China, November 26.

Clarence Edward Burt, M.D., to Miss Anne Beatrice McCullough, both of New Bedford, Mass., November 25.

Wilbur Randolph Hurst, M.D., to Miss Gertrude Amy Rosencranz, both of Evansville, Ind., November 11.

William Henry Eason, M.D., Lula, Miss., to Miss Willie Joyner Greer of Potts Camp, Miss., November 5.

Peter Jackson Sherlock, M.D., Lockridge, Ia., to Miss Stella Garbre of Mt. Pleasant, Ia., November 17.

Alfred Townsend Osgood, M.D., to Miss Ethna de Lestere Mackeye, both of New York City, November 24.

Edward Morrison Myers, M.D., Boone, Ia., to Miss Margaret Ross of Frankfort, Ind., November 24.

Jacob Victor Greenebaum, M.D., Cincinnati, to Miss Fannie Frank of Boston, November 22.

Arthur Reeves, M.D., Bladen, Neb., to Miss Flora Wilderman of Pittsburg, Kan., November 9.

John E. O'Neill, M.D., to Miss Catherine Agnes Thuman, both of Baltimore, November 23.

Walter Edward List, M.D., to Miss Beulah Kleespies, both of Cincinnati, November 25.

Deaths

Clinton Wagner, M.D. University of Maryland, Baltimore, 1859; surgeon-in-chief of the Second Division of the Fifth Army Corps of the Army of the Potomac; prime mover in the establishment of several military hospitals, including the first floating hospital on Western waters; founder of the New York Laryngological Society and instrumental in the founding of the American Laryngological Society; first professor of laryngology and rhinology in the New York Post-Graduate Medical School and Hospital; inventor of many surgical instruments and the author of voluminous literature relating to his specialty; died in Geneva, Switzerland, November 25, aged 77 years.

John Walter Grimes, M.D. University of the South, Sewanee, Tenn., 1898; a member of the Medical Association of the State of Alabama; once president of the Talladega County (Ala.) Medical Association; a practitioner of Talladega Springs and surgeon for the Alabama Mineral Division of the Louisville and Nashville System; who moved to Clayton, N. Mex., two years ago on account of tuberculosis; died in that place, November 27, from pulmonary hemorrhage, aged 46.

Euclid Van Zandt, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1878; a pioneer practitioner and for many years county physician of Whatcom County, Wash.; for several years president of the Washington State Medical Association and of the State Board of Medical Examiners; in 1904 appointed superintendent of the State Hospital for the Insane, Fort Steilacoom; died in Bellingham, Wash., November 20, from arteriosclerosis, aged 70.

Darwin Adelbert Stewart, M.D. College of Physicians and Surgeons in the City of New York, 1869; of Winona, Minn.; a member of the Minnesota State Medical Association; in 1902 and 1903 mayor of Winona, Minn.; for ten years coroner of Winona County; for five years city physician, and once president of the school board; local physician for the Chicago, Milwaukee and St. Paul Railway; died in St. Barnabas' Hospital, Minneapolis, November 30, aged 69.

Harry T. Walker, M.D. Keokuk (Ia.) Medical College, 1898; of Dubuque, Ia.; formerly a Fellow of the American Medical Association; a member of the Iowa State Medical Society; a member of the staff of St. Joseph's Mercy Insane Hospital; died in Mercy Hospital, Dubuque, November 30, a few hours after an operation for disease of the kidney, aged 48.

Albert Charles Peale, M.D. University of Pennsylvania, Philadelphia, 1871; for more than thirty years connected with the Smithsonian Institute and the National Museum, Washington; mineralogist and geologist in the government employ in the survey of the territories from 1871 to 1879; and geologist of the U. S. Geological Survey from 1883 to 1898; died in the German Hospital, Philadelphia, December 5, from cerebral hemorrhage, aged 65.

William Terrence Carolin, M.D. Harvard Medical School, 1877; a Fellow of the American Medical Association and formerly a member of the Massachusetts State Board of Health, Lunacy and Charity; died at his home in Lowell, Mass., November 21, aged 62. The active pall-bearers at his funeral were his professional associates in Lowell.

James Sullivan Howe, M.D. Harvard Medical School, 1881; a Fellow of the American Medical Association and American Dermatological Association; professor of dermatology in Tufts College Medical School, Boston; dermatologist to the Boston City Hospital and Boston Dispensary; died at his home in Brookline, Mass., November 22, aged 56.

Benjamin F. Whitmer, M.D. Jefferson Medical College, 1868; formerly a member of the Indiana State Medical Association and for more than thirty-five years a practitioner of Elkhart County; a surgeon in the Federal service during the Civil War; died at his home in Goshen, Ind.; November 22, from cerebral hemorrhage, aged 76.

J. McBride Johnson, M.D. Kentucky School of Medicine, Louisville, 1899; of West Plains, Mo.; a member of the Missouri State Medical Association and a specialist in diseases of the eye, ear, nose and throat; died in a hospital in Springfield, Mo., November 22, from nephritis, aged 42.

Mosheim S. Burgess, M.D. Maryland Medical College, Baltimore, 1907; formerly of Medford, Ore.; died in his office in Wayne, W. Va., November 24, from the effects of a gunshot wound of the head, self-inflicted, it is believed with suicidal intent, aged 34.

Albert Barnes Dorman, M.D. College of Physicians and Surgeons, Boston, Mass., 1892; a member of the Massachusetts Medical Society; a practitioner of Winthrop, Mass., for more than thirty-five years, and for twelve years, chairman of the board of health of that town; died at his home in Winthrop, November 22, aged 59.

William Palmer Melcher, M.D. University of Pennsylvania, Philadelphia, 1876; a Fellow of the American Medical Association; for six years a practitioner of Camden, N. Y.; visiting physician to the Burlington County (N. J.) Hospital; died at his home in Mt. Holly, N. J., November 30, from heart disease, aged 65.

Frederick Enoch Shaw, M.D. Cooper Medical College, San Francisco, 1908; a member of the Medical Society of the State of California; formerly a resident of Haverhill, Mass.; recently elected commissioner of finance of Sacramento, Cal.; died at his home in that city, November 29, from pulmonary hemorrhage, aged 35.

Francis Lester Babcock, M.D. Boston University School of Medicine, 1879; for many years a member of the Dedham (Mass.) Board of Health and for ten years visiting physician to the Norfolk County Home, Dedham; died at his home in East Dedham, Mass., October 27, from cerebral hemorrhage, aged 65.

Samuel Webb Scales, M.D. Vanderbilt University, Nashville, Tenn., 1905; of Starkville, Miss.; surgeon to the John N. Stone Cotton Mills; while crossing the railroad tracks near his home, November 26, in his automobile, was run down by a passenger train and almost instantly killed, aged 34.

William Ernest Walker, M.D. Baltimore College of Dental Surgery, 1889; University Medical College, Richmond, Va., 1900; an Associate Fellow of the American Medical Association and a prominent dentist and oral surgeon of New Orleans; died in the Hotel Dieu in that city, November 21, aged 46.

William Tatum Richmond, M.D. Tulane University, New Orleans, 1882; a Confederate veteran; for many years a practitioner of Manor and Edna, Texas; health officer of Edna and Jackson counties; died at the home of his son in El Paso, Texas, November 22, from heart disease, aged 72.

Warren Morris Babbitt, M.D. New York University, New York City, 1858; assistant surgeon of the Fifty-Fifth Massachusetts Volunteer Infantry and later surgeon of a New York regiment during the Civil War; died at his home in South Braintree, Mass., November 26, from pneumonia, aged 82.

Charles Bailey Simcoe, M.D. Missouri Medical College, St. Louis, 1884; superintendent of the State Institution for Feeble-Minded, Marshall, and later assistant physician at the Nevada State Hospital; died in that institution, November 21, from nephritis, aged 54.

Marshall T. Shively, M.D. Medical College of Ohio, Cincinnati, 1874; a member of the Indiana State Medical Association and a prominent practitioner of Grant County, Ind.; died at his home in Marion, November 23, from cerebral hemorrhage, aged 65.

James Muir Halstead, M.D. Kentucky University, Louisville, 1906; of Ridgway, Colo.; local surgeon for the Denver and Rio Grande System; died in the Mont Rose Hospital, November 14, a few hours after an operation for acute appendicitis, aged 29.

William Wesley Johnson, M.D. University of Pennsylvania, Philadelphia, 1865; of Chester, Pa.; surgeon of U. S. Volunteers during the Civil War; died suddenly while making a professional call in Chester, Pa., October 21, from cerebral hemorrhage, aged 77.

Charles W. Shreve, M.D. University of Maryland, Baltimore, 1858; for many years a practitioner of Dickerson, Md.; died at the home of his son in Washington, D. C., November 24, from the effects of a fracture of the hip three months before, aged 80.

Charles Bertram Powell, M.D. University of Minnesota, Minneapolis, 1894; a Fellow of the American Medical Association and a specialist on diseases of the eye, ear, nose and throat; died at his home in Bemidji, Minn., November 30, aged 43.

Jeptha J. Alford, M.D. Tulane University, New Orleans, 1857; formerly a member of the Louisiana Legislature and a resident of Sunny Hill; one of the oldest residents of Washington Parish; died at the home of his son near Osyka, Miss., November 21.

William Augustine Hewins, M.D. Miami Medical College, Cincinnati, 1878; a Fellow of the American Medical Association; for thirty-five years a practitioner of Chandler, Ind.; died at his home in that place, November 26, from asthma, aged 63.

John Irvine Wiley, M.D. Trinity Medical College, Toronto, Ont., 1889, and gold medalist of his year; a member of the Board of Education of Dresden, Ont.; died at his home in that place, October 15, from pernicious anemia, aged 48.

J. T. Bettis, M.D. Cleveland Homeopathic Medical College, 1869; a veteran of the Civil War; and for more than forty years a practitioner of Livonia, N. Y.; died at his home in that city, November 22, from heart disease, aged 69.

Samuel William Coombs, M.D. Vanderbilt University, Nashville, Tenn., 1885; local surgeon at Bowling Green, Ky., for the Louisville and Nashville System; died at his home November 20, from cerebral hemorrhage, aged 51.

Crawford Johnston, M.D. University of Toronto, Ont., 1907; an early practitioner of Sheridan County, Mont., and a resident of Culbertson; died in the Havre (Mont.) Hospital, November 14, from typhoid fever, aged 32.

Hannibal W. Rand, M.D. University of Vermont, Burlington, 1881; a Fellow of the American Medical Association; health officer of Keene, N. Y.; died in the Mary Fletcher Hospital, Burlington, Vt., November 20, aged 60.

Walter V. Hanscom, M.D. Hahnemann Medical College, Philadelphia, 1890; for sixteen years in charge of a hospital in Rockland, Me.; died at the home of his brother in Haverhill, Mass., November 7, from nephritis, aged 45.

Elton L. Wilson, M.D. Tulane University, New Orleans, 1883; a Fellow of the American Medical Association, and for many years a practitioner of Yell County, Ark.; died at his home in Fowler, Ark., November 26, aged 55.

Thomas Olin Jones, M.D. University of Virginia, Charlottesville, 1875; a member of the Medical Society of Virginia; died at his home in Harrisonburg, Va., November 22, from cerebral hemorrhage, aged 63.

John B. Brierly, M.D. Missouri Medical College, St. Louis, 1888; of Gunn City, Mo.; a member of the Missouri State Medical Association; died in the German Hospital, Kansas City, Mo., November 20, aged 53.

Warren M. Campbell, M.D. Cincinnati College of Medicine and Surgery, 1871; for more than sixty years a practitioner; died at his home in Kansas City, Mo., November 28, aged 87.

Delphius W. Howard, M.D. Hahnemann Medical College, Chicago, 1881; formerly mayor of Independence and Nevada, Mo.; died at his home in Nevada, November 21.

Frederick Seitz, M.D. Jefferson Medical College, 1886; for thirty-eight years a physician and druggist of Philadelphia; died at his home in that city, November 25, from cerebral hemorrhage, aged 63.

William H. Smith, M.D. Western Reserve University, Cleveland, Ohio, 1876; for fifty-eight years a practitioner of Rushville, Ind.; died at his home in that city, November 10, from angina pectoris, aged 80.

John T. Hubel, M.D. Detroit College of Medicine, 1899; examining surgeon to the United States Marine Corps in Detroit; died at his home in that city, November 29, from disease of the lungs, aged 37.

Thaddeus FitzHugh, M.D. Medical College of Virginia, Richmond, 1859; a Confederate veteran; in 1896 appointed postmaster of Kansas City, Kan.; died at his home in that city, November 21, aged 79.

Stephen Clarence Pettit, M.D. Long Island College Hospital, Brooklyn, 1895; died at his home in Brooklyn December 3, from septicemia due to an infected wound received while operating, aged 43.

Louis C. Long, M.D. Northwestern Medical College, St. Joseph, Mo., 1882; for twenty-three years a practitioner of Lincoln, Neb.; died at his home in that city, December 2, from diabetes, aged 57.

Sarah C. Hussey Millen, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1882; of Omaha, Neb.; died in the Nicholas Senn Hospital, Omaha, November 22, from cerebral hemorrhage, aged 59.

Newton Graves, M.D. Western Reserve University, Cleveland, Ohio, 1862; for more than twenty years a practitioner of Stafford; died in the Masonic Home, Utica, N. Y., November 23, aged 86.

J. M. Sheppard, M.D. Baltimore Medical College, 1894; a member of the West Virginia Medical Association; was found frozen to death near his home at Falls Mills, Va., November 21.

Robert McNeilly, M.D. University of Pennsylvania, Philadelphia, 1863; assistant surgeon of Volunteers during the Civil War; died at his home in New York City, November 28, aged 83.

Loren S. Barton Otwell, M.D. Medical College of Ohio, Cincinnati, 1865; a pioneer practitioner of southeastern Kansas; died at his home in Independence, Kan., December 3, aged 87.

Isaac Moore, M.D. St. Louis Medical College, 1870; for many years a practitioner of Alton, Ill.; died in the Deaconess Hospital, St. Louis, November 19, after a surgical operation, aged 67.

William Henry Baldinger, M.D. Jefferson Medical College, 1885; oculist and aurist to the Home for Homeless Children, Galveston, Texas; died recently at his home in Galveston, aged 54.

Ralph H. Augur, M.D. Baltimore Medical College, 1909; a post-graduate worker in John Hopkins Hospital; was found dead in his office in Baltimore, November 27, aged 32.

James Henry Cocke, M.D. Memphis Hospital Medical College, 1900; a member of the Tennessee State Medical Association; died at his home in Moscow, Tenn., November 19.

Michael Richard McGarry, M.D. Dalhousie University, Halifax, N. S., 1908; of Florence, N. S.; died in Harbor View Hospital, North Sydney, N. S., September 23, aged 34.

Welcome Harrison Calfee, M.D. St. Louis Medical College, 1870; Bellevue Hospital Medical College, 1877; of Muskogee, Okla.; died in Big Cabin, Okla., October 21, aged 73.

Stephen H. Gillis, M.D. McGill University, Montreal, 1910; of St. Louis, P. E. I.; died in the Charlottetown, P. E. I. Hospital, September 16, from typhoid fever, aged 29.

Charles R. Crow, M.D. Eclectic College of Physicians and Surgeons, Indianapolis, Ind., 1892; died at his home in Indianapolis, November 27, from neuritis, aged 62.

Frederick W. Kohler, M.D. Jefferson Medical College, 1882; well known as a travel lecturer of Philadelphia; died in the German Hospital in that city, November 27.

J. W. Hogsett, M.D. Medical College of Indiana, Indianapolis, 1875; a veteran of the Civil War; died recently at his home in Lincoln, Kan.

Albert Elliott Wright (license, Michigan, twelve years of practice, 1900) for nearly half a century a resident of Ecorse, Mich.; died at his home, November 28, aged 73.

Willis B. Parks, M.D. Southern Medical College, Atlanta, Ga., 1881; died at his home in Atlanta, November 23, aged 61.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WARNER'S SAFE REMEDY

An Unsafe and Fraudulent Nostrum

"Warner's Safe Remedy for the Kidneys and Liver and Bright's Disease" was sold, not long ago, as "Warner's Safe Cure for Kidney and Liver, Bright's Disease, Urinary Disorders, Female Complaints, General Debility, Malaria and all Diseases caused by Disordered Kidneys and Liver." The company that puts the product on the market was known, until recently, as Warner's Safe Cure Company, Rochester, N. Y. It is now "Warner's Safe Remedies Company." The Warner concern is said to be leased by, and practically a subsidiary company of the New York and Kentucky Company, distillers and wholesale liquor dealers of Rochester, whose business is frankly and openly the manufacture of whiskies. Another subsidiary concern of the New York and Kentucky Company is the Duffy Malt Whiskey Company.

The history of Warner's Safe Remedy is typical of the "patent medicine" business. In the free and easy days, before the public was protected by the Food and Drugs Act, Warner's Safe Cure was advertised extensively — and fraudulently. Efforts were made to impress on the well and the sick the falsehoods that most aches and pains are due to diseased kidneys; that a pain in the back is a sure sign of Bright's disease, and that the only sure cure is the Warner nostrum. The concern went even further in its attempt to frighten people into purchasing Warner's Safe Cure. The advertisements contained what purported to be a sure and simple test for kidney disease. This "test" was led up to by such "scare" claims as:

"At every stroke of the clock a human life goes out. Nearly one-half of all deaths are the result of kidney disease. Nine men and women out of every ten have kidney trouble. If in doubt, try this simple home test":

"Diseased kidneys cause more sickness, suffering and serious complications than any other disease. Thousands of people have kidney trouble and do not know it. If in doubt make this test":

"Thousands of men and women have kidney disease and do not know it until it is too late. This simple test will tell":

The "test" by which the susceptible were to be frightened into a belief that they were seriously ill was described thus:

"Put some morning urine in a glass or bottle; let it stand for twenty-four hours. If then it is milky or cloudy or contains reddish brick-dust sediment, or if particles or germs float about in it, your kidneys are diseased. This is the supreme moment when you should begin to take Warner's Safe Cure to arrest all these unnatural conditions, for they are the unmistakable symptoms of kidney disease."

They are "unmistakable symptoms" of nothing of the sort. Practically any normal urine from a perfectly healthy individual will become more or less cloudy after standing twenty-four hours. "Brick-dust sediment" indicates nothing more serious than a concentrated urine and is not an "unmistakable symptom" of "kidney disease." How much mental anguish has been caused by, and how many poor devils have been frightened into purchasing this false and fraudulent nostrum through the villainous suggestion contained in the "test" just quoted there is no means of knowing. That it brought in a golden harvest to the stockholders in Warner's Safe Cure Company, can not be doubted.

Reduced facsimiles of the Warner labels as used in the United States (on right) and in the British Isles (on left) after the passage of the Food and Drugs Act. Notice that the "Cure" became a "Remedy" in the United States and the range of diseases for which the stuff is, or was, recommended is much smaller on this side of the Atlantic.

With the coming of the Food and Drugs Act, the cruder and more evidently false claims made for this nostrum began slowly to disappear. For some years, however, the lying continued in the newspaper advertising, although certain modifications were made in the labels and cartons. The labels and cartons used in Great Britain, however, continued to bear the same false statements years after the change had been made in the American labels. Such statements as those that follow continued to accompany the trade package of Warner's Safe Cure as sold in Great Britain, long after similar falsehoods had been eliminated from the trade package of the Warner nostrum sold in the United States:

"Warner's Safe Cure is a purely vegetable preparation . . ."

"It is the only recognized specific."

"Warner's Safe Cure is the most wonderful and beneficent medicine known."

"Backache is the one sure sign of deranged kidneys."

At various times this nostrum has been analyzed and the composition of the product has been described. According to a quotation appearing in the report of the Australian Royal Commission on Secret Drugs, Cures and Foods, the following formula for Warner's "Safe Kidney and Liver Cure" was furnished the German government in accordance with the law:

Extract lycopus virginiana	308	grains
Extract hepatica (herb)	322	grains
Extract gaultheria.	7½	grains
Potassium nitrate	39	grains
Alcohol (90 per cent.)	2½	ounces
Glycerin	10	drams
Water sufficient to make	1	pint

It is reported that as long ago as 1887 the Health Department at Karlsruhe issued a warning to the public against the use of Warner's Safe Cure and closed its pronouncement with the statement: "We warn you against buying this useless medicine."

From the formula given above, it will be seen that the essential drugs in the nostrum are alcohol and potassium nitrate. In 1907 the North Dakota Agricultural Experiment Station analyzed the stuff and it, too, found potassium nitrate and alcohol as, also, did the chemists of the British Medical Association in 1909. Still more recently the chemists of the Laboratory of the American Medical Association have examined Warner's Safe Remedy with the following results:

LABORATORY REPORT

One bottle of Warner's Safe Remedy, manufactured by the Warner's Safe Remedies Co., Rochester, N. Y., was submitted to the Chemical Laboratory for examination. The bottle contained a brown murky liquid, having an aromatic flavor, the odor of oil of wintergreen being quite pronounced. The specific gravity of the liquid at 15.6 C. was 1.0653. Qualitative tests demonstrated the presence of potassium, trace of sodium, nitrate, glycerin, alcohol, and extractive matter.

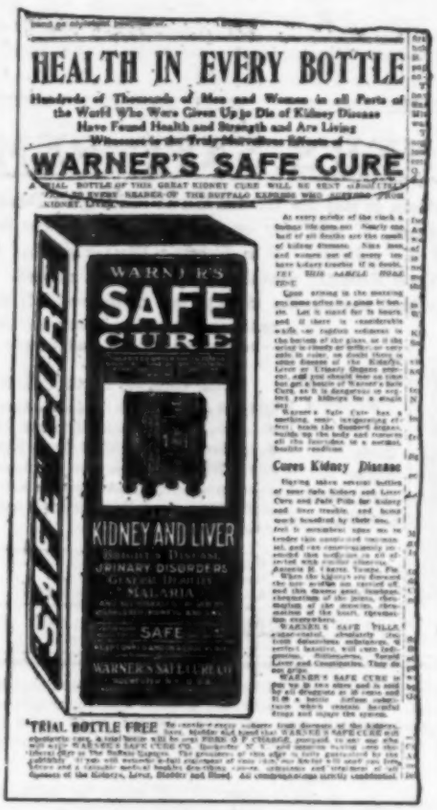
Quantitative estimations yielded the following:

Alcohol (by volume)	14.40 per cent.
Glycerin (by weight)	7.72 per cent.
Pot. nitrate (calculated from 0.68 per cent. potassium)	1.75 per cent.

Each fluid ounce (two tablespoonfuls) contains essentially 4.5 c.c. of 95 per cent. alcohol, 2 c.c. (½ fluid drachm) glycerin and .55 gm. (8½ gr.) potassium nitrate with extractive matter.

Here, then, we have a preparation sold inferentially for the cure of Bright's disease and consisting essentially of alcohol, glycerin and potassium nitrate, with extractives. Alcohol, of course, is contra-indicated in inflammatory diseases of the kidney. Potassium nitrate is a kidney irritant and would tend to aggravate any inflammation that might exist. The label on the bottle of Warner's Safe Remedy declares the presence of 15.5 per cent. alcohol and recommends a dosage of one tablespoonful four to six times a day. The circular wrapped around the bottle recommends "one tablespoonful six or eight times a day." Taken at the maximum dose recommended, one large (pint) bottle of Warner's Safe Remedy would last four days. Such a bottle of Warner's Safe Cure contains an amount of alcohol equivalent to the alcohol in 5 ounces of whiskey. This means that the person suffering from Bright's disease who buys Warner's Safe Remedy and takes it according to directions may get the equivalent of 5 ounces of whiskey every four days. In addition to this he may also be getting a daily dose of 34 grains of potassium nitrate to irritate the kidneys further.

Not only, then, will Warner's Safe Remedy not cure Bright's disease but it may hasten the death of the sufferer who takes it. Those who, suffering from diseases of the kidney, rely on Warner's Safe Remedy, will not only be cruelly defrauded but will, without question, shorten their lives.


HEALTH IN EVERY BOTTLE
Hundreds of Thousands of Men and Women in all Parts of the World Who Were Given Up to Die of Kidney Disease Have Found Health and Strength and Are Living
WARNER'S SAFE CURE
WARNER'S
SAFE
CURE
KIDNEY AND LIVER
SAFE
SAFE CURE
Cures Kidney Disease
TRIAL BOTTLE FREE

A typical Warner advertisement of a few years ago. Notice the "scare stuff" and the fraudulent "home test."

CYPRIDOL CAPSULES

Report of the Council on Pharmacy and Chemistry

Having voted that Cypridol Capsules be refused recognition, the Council directed that for the information of physicians publication of the following report be authorized.

W. A. PUCKNER, Secretary.

Cypridol Capsules, sold by E. Fougera & Co., New York, are stated to be "Bottled in the New York Laboratories of Vial, late Rigaud and Chapoteaut, Paris," and to contain, in each capsule, 2 mg. (1/32 grain) mercuric iodid (biniodid of mercury) dissolved in a fatty oil. They are claimed to permit the administration of mercury without danger of salivation—an obvious misrepresentation.[1] Cypridol Capsules are marketed in a way to appeal to the public. If they are once prescribed, the directions on the bottle and the full instructions for the treatment of syphilis by means of Cypridol and by other proprietaries sold by Fougera & Co. is likely to lead the patient to attempt the treatment of his malady on his own accord, and thus probably to forfeit his chances of cure. Cypridol is a vicious example of the "ready-to-take" proprietaries.

Cypridol Capsules are in conflict with the Rules of the Council as follows:

Rule 4: The dosage, price, etc., on the label, and the name "Cypridol" blown in the bottle, all tend to a direct self-prescribing by the public. In addition to the objectionable statements on the bottle itself, the preparation is put up in patent medicine style and is accompanied by a circular giving full directions for the use of this and of other proprietaries for the treatment of syphilis in all of its stages. The circular states that "a 1 per cent. solution of bin-iodide of mercury in an aseptic oil" is "An Improved Specific in the Treatment of Syphilis," and after lauding the virtues of Cypridol, gives full directions for the treatment of syphilis in its various stages by means of Capsules of Cypridol augmented, during periodical cessation of treatment, by "small doses of iodide of strontium (Paraf-Javal's standard solution, thirty grains to the ounce)." Further, the circular expounds the need of "a toning up of the general system" and by means of obsolete theories and obviously untrue assertions recommends "*Chapoteaut's Wine* [another of their proprietary preparations], each ounce of which contains 10 grains of phospho-glycerate of lime. This is a delicious, nutritive tonic. A pint bottle costs $1.00."

Rule 6: Whereas it is evident that Cypridol, depending for its effects on mercuric iodid, the ordinary well-known hydrargyri iodidum rubrum of the U. S. Pharmacopeia, must naturally have the properties of a mercuric compound, unwarranted claims such as the following are made:

"CYPRIDOL does not render patients anemic. Ptyalism never follows the administration of the capsules or injections. On the contrary, patients rapidly put on flesh and keep well. There are no diarrhoeas or other symptoms of intolerance even when the dose is pushed."

Rule 8: The non-informing name "Cypridol" for a mercuric iodid preparation is bound to lead to its use without consideration of the fact that a potent mercury preparation is being used, requiring a careful adjustment of dosage, a consideration of the needs of the individual case, a correct diagnosis, etc. While the advertising propaganda argues that "physicians recognize the advantage of prescribing this solution of mercuric iodide in an aseptic oil under the name of 'Cypridol,' because it does not betray to the laity the fact that mercury is being used," not only the physician but also the patient has a right to know, and ought to know, the potent character of the remedy which is being administered.

It is recommended that Cypridol be refused recognition and that publication of this report be authorized.

INTESTINAL ANTISEPTIC W-A

Report of the Council on Pharmacy and Chemistry

The Council voted that Intestinal Antiseptic W-A be refused recognition, and that the publication of the following report be authorized. W. A. PUCKNER, Secretary.

The Abbott Alkaloidal Company advertises "Intestinal Antiseptic W-A" as

". . . A scientifically blended and physiologically adjusted mixture, of the pure sulphocarbolates of calcium, sodium and zinc, grs. 5, with bismuth subsalicylate, gr. 1-4 and aromatics."

1. Physicians who desire to use a solution of mercuric iodid in oil should direct their pharmacist to prepare it according to the method suggested by Lemaire (Repert. pharm., xxi, 97-102, from Chem. Abst., 1909, p. 1444), viz: One gm. of mercuric iodid is dissolved in 50 c.c. sterilized castor oil by warming to about 70 degrees, 3 gm. guaiacol are added and the solution made up to 100 c.c. with sterilized poppy oil. Or according to a later suggestion (Dunning: Proc. Am. Pharm. Assn., 1910, p. 1123): one gm. of mercuric iodid is dissolved in 99 gm. of a mixture of equal parts of sterilized castor and olive oils, by warming on the water-bath.

This formula is in conflict with Rule 1 in that it does not state in what proportion the sulphocarbolates are present.

The name "Intestinal Antiseptic W-A" is in conflict with Rules 4 and 8, since it is therapeutically suggestive.

The preparation is in conflict with Rules 6 and 10, in that exaggerated claims are made for it, no evidence being submitted to prove the superior value of the mixture.

The most serious of these conflicts consists in the exaggerated and misleading therapeutic claims. The advertisements say:

"This combination has no equal as an antiseptic and inhibitive agent in typhoid fever, diarrhea, dysentery," etc.

"Numerous cleverly devised and scientifically constructed intestinal antiseptics have been introduced to the profession, but not one of them has ever rivaled for one moment these salts in popularity."

". . . we are convinced that no small share of the credit for the reduction of the death rate in infantile diarrheas is due to the widespread application of this general method of treatment, associated of course with the calomel clean-out and the regulation of diet, now known to be essential."

"But the use of the sulphocarbolates is not restricted to diseases of the alimentary canal, although in the summer diarrheas, gastric fermentation, intestinal indigestion, typhoid fever, dysentery—indeed in all alimentary disturbances—it is the one essential remedy. It is also indicated in practically all infectious diseases."

"Typhoid Fever (in this disease the W-A Intestinal Antiseptic is of great value; used early, with the proper synergistic cleanout, it will often cut short the disease)."

These extreme claims exceed the limits of permissible optimism, unless they are supported by strong dependable evidence. They contrast sharply with the low esteem in which the phenolsulphonates (sulphocarbolates) are generally held. To accept these claims, and to justify encouraging physicians to rely on them, it would be necessary to establish:

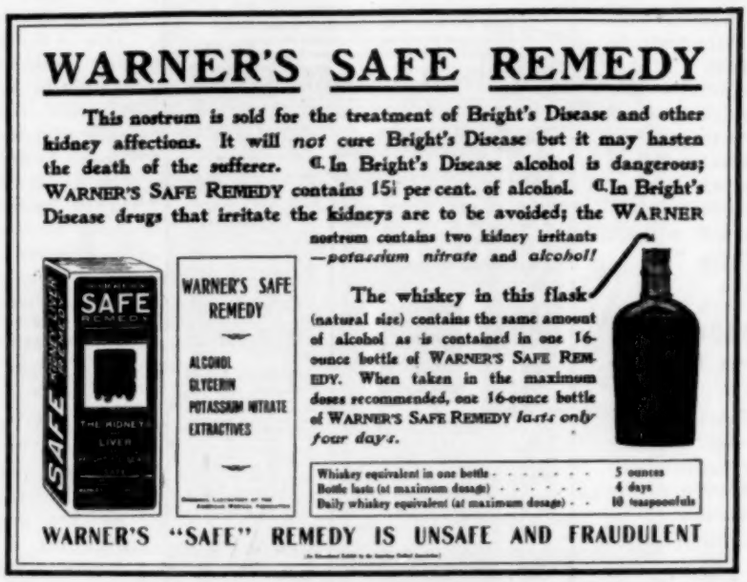
First, that feasible concentrations have a distinct antiseptic action on cultures of intestinal bacteria. This experiment could be easily made, but the claims do not seem to be based on evidence of this kind.

Second, that the preparation actually checks putrefaction in the intestines. There are several methods by which this proof may be attempted; but the claims do not appear to be based on evidence of this kind.

Third, that the preparation actually has a favorable influence on the progress of diseases. This sort of evidence is exposed to so many fallacies that it would have to be gathered very carefully and critically, duly discounting the effect of other treatment; for instance, by comparison with similar cases which do not receive this preparation. This is especially important; and yet we find directions to use this preparation in conjunction with active cathartic treatment, which in itself has considerable influence on the conditions for which this preparation is recommended. No evidence of this kind is presented.

The testimonials contained in the advertisements cannot be considered as serious evidence. None present any indication of accurate record, or proper control of conditions; of the performance of control observations. They are superficial impressions, to which little or no weight can be attached.

It is recommended that Intestinal Antiseptic W-A be considered ineligible for New and Nonofficial Remedies.


WARNER'S SAFE REMEDY
This nostrum is sold for the treatment of Bright's Disease and other kidney affections. It will not cure Bright's Disease but it may hasten the death of the sufferer. ¶ In Bright's Disease alcohol is dangerous; WARNER'S SAFE REMEDY contains 15¼ per cent. of alcohol. ¶ In Bright's Disease drugs that irritate the kidneys are to be avoided; the WARNER nostrum contains two kidney irritants —potassium nitrate and alcohol!
SAFE REMEDY
THE KIDNEYS LIVER
WARNER'S SAFE REMEDY
ALCOHOL
GLYCERIN
POTASSIUM NITRATE
EXTRACTIVES
The whiskey in this flask (natural size) contains the same amount of alcohol as is contained in one 16-ounce bottle of WARNER'S SAFE REMEDY. When taken in the maximum doses recommended, one 16-ounce bottle of WARNER'S SAFE REMEDY lasts only four days.
Whiskey equivalent in one bottle . . . . . 5 ounces
Bottle lasts (at maximum dosage) . . . . . 4 days
Daily whiskey equivalent (at maximum dosage) . . 10 teaspoonfuls
WARNER'S "SAFE" REMEDY IS UNSAFE AND FRAUDULENT

Miniature reproduction of an educational poster prepared by the Propaganda for Reform Department. Twenty-eight different posters already prepared, illustrate various phases of the evils of nostrums and quackery. In the original the placards measure 22 by 28 inches. A catalog of the complete set will be sent on request.

Correspondence

Justice and Science

To the Editor:—In the evolution of medical education, which is going on so rapidly at the present time, a condition has arisen which is anomalous and certainly, from more than one point of view, fundamentally wrong. The proposition is being brought forward, and in some instances is being carried out, to have full-time teachers of medicine and surgery and their allied branches, on salaries of ten thousand dollars or more per year. With the question of the wisdom of full-time professorships in the practical departments of medicine, a matter which is still under debate, I do not wish to deal, but I do want, as a clinician, to speak a word about the injustice which this plan works to the men who are equally deserving of large salaries, not only because of their ability, but because they have deliberately devoted themselves to their special departments of medical science as teachers and investigators, and, in order to be *facile princeps* in their respective departments, have deliberately narrowed their opportunities of making a living. I refer to professors of the so-called fundamental branches in medicine, viz.: chemistry, anatomy, physiology, bacteriology and pathology, who are receiving as a maximum salary four to five thousand dollars per year. It would seem, now that it is so universally agreed that these men shall give their whole time to teaching and investigation, that the next effort should be to see that funds are raised for their generous support and that the collecting of money with which to pay salaries to full-time professors in clinical departments should wait until those men who are already giving their full time are adequately provided for.

It may be said that a clinician cannot be obtained for a full-time professorship for less than ten thousand dollars a year and that a teacher of one of the fundamental branches of medicine can be gotten for five thousand dollars, and that, therefore, the proposition is purely a commercial one, based upon the law of supply and demand; but is this the best way to advance medical science or medical teaching, and is it just? Shall it be said to a young man who is starting on his career, "If you go into medical science and do good work, for a number of years you will receive a mere pittance as an assistant and, when you reach the ultimate goal, a professorship, you will never get more than five thousand dollars yearly, whereas, if you go into clinical medicine or surgery you will before long be self-supporting from your practice, and when you become a professor you will get ten thousand dollars annually"?

For the advance of science three things are necessary. First, devotion to its cause. Second, a mind free from the unavoidable annoyances of a meager salary, and, last, a consciousness that the world in general, and medical men in particular, are enthusiastic and generous supporters of all of those who unselfishly use their great abilities for the good

of science rather than for their personal gain. Do the men who control large sums of money, and do the men who control scientific institutions really intend to make such invidious distinctions between able men in clinical medicine and surgery on the one hand and equally able men in the fundamental medical sciences on the other, as to say to a clinician, "We will pay you ten thousand dollars," and to another man, "As you are a physiological chemist or pathologist, we will pay you only five thousand dollars"?

Both men are at liberty at any time to resign their professorships. The clinician on resigning is practically guaranteed a greater income by reason of the title which he has borne in a great institution. The other man, having devoted himself solely to a non-clinical scientific pursuit, has no means of gaining a livelihood except by finding another professorship at a salary no larger than that which he has given up.

In other words, while we discuss the abstract problem of full-time clinical professors, had we not better devote our energies in properly providing for the full-time men already engaged? These are they who not only set an example to the student of unselfish devotion and who perform their task for the work's sake, but who also in most instances lay the foundation upon which the clinician can build. Taking it all in all, is it not a fact that the average investigator and teacher, possessing the genius of original researeh, is deserving of reward at the hands of colleges and universities at least to the same extent as any other appointee?

H. A. HARE, M.D., Philadelphia.

Importance of Geriatrics

To the Editor:—Canstatt (Krankheiten des höheren Alters und ihre Heilung, Erlangen, 1839) says:

"Medical literature, especially of the present day, abounds in works on diseases of women and children. The pathology of certain organs and of certain classes of diseases receives exceptional attention. Bare and neglected in comparison with these lovingly fostered medical studies is a field which, if it were cultivated, promises fruitful returns." (Free translation.)

Charcot, in his "Clinical Lectures on the Diseases of the Aged" (Hunt's American translation, 1881), says:

"The importance of a special study of the diseases of old age cannot be contested at this day. We have come to recognize in reality that, if the pathology of childhood countenances clinical considerations of a special kind, and if it is indispensable that it be known from a practical point of view, then also senile pathology presents its difficulties, which cannot be surmounted except by long experience and a profound acquaintance with its peculiar characteristics."

"The progress of age establishes a wide difference in pathological phenomena, by virtue of its physiological modifications. . . . . There do exist special diseases of old age which, in part at least, arise from the general modifications which the economy has undergone. . . . I think enough has been advanced to convince you that a *senile* pathology does exist."

Seidel in his monograph on "Diseases of Old Age" (Wood's monographs, 1890) says:

"Mistakes are made daily in the treatment of the aged, and the normal mortality of advanced life is considerably increased as a consequence of the hitherto neglected study of the anatomical and physiological peculiarities of the senile organism."

Schwalbe in his "Lehrbuch der Greisenkrankheiten," Stuttgart, 1909, referring to the selection from Canstatt quoted above, says:

"These still apply in full force, and the fact is more noticeable to-day than it was in the fourth decade of the last century."

The subject is taken up seriously in Germany and especially in France, where three text-books have appeared within a few years. Saundby (Old Age, Its Care and Treatment, London, 1913) quotes fifty-one dated works. Of these, twenty-one are English but only four are of the present century. Of nineteen French works, sixteen are of the present century, and of eleven German works eight appeared since 1900. Not a single American author is quoted, and of 446 authors quoted by Schwalbe there are only six Americans, and three of these are really German physicians. In 1911 five theses on senile conditions were presented to the French Academy. I will not take up here the many reasons why geriatrics should take a place in medicine analogous to pediatrics. I will point out, however, that the pediatrist does not look on the child as an adult with incompletely developed organs and tissues but as a *child*; and the geriatrist (I think the term is applicable) does not look on the aged person as an adult having pathologically degenerated organs and tissues, but as an aged person. The lack of an adequate term expressing the aged person, like the German *Greis*, or the French *vieillard*, has perhaps some influence in perpetuating our antiquated point of view of the aged. If we will realize, for example, that in the aged the normal systolic pressure is about the age plus 100 in millimeters, that the erythrocyte count is about 3,600,000, and that the polynuclear leukocytes are increased, that the urine is diminished in amount, that the urea output is greatly lessened, that albumin and sugar are frequently found without other evidence of nephritis or diabetes, that the normal expiration is about 20 a minute, yet the carbon dioxid output is from 20 to 40 per cent. less than in maturity, etc., we shall not make efforts, such as are often made now, to restore such conditions to the norm of maturity. With a knowledge of senile anatomy and physiology and senile pathology, we can clear ourselves of Seidel's justified charge, for it holds as good to-day as it did nearly twenty-five years ago. The subject, if not the name, is recognized in Germany and it is studied in France, while we are so intent in our efforts to lead the world in surgery and child welfare that we neglect the less promising, less interesting, less remunerative, economically deficient, aged.

Part of what I have said applies also to the public care of the aged. To those who are sufficiently interested in the well-being of the aged to study their welfare, I would recommend a visit to the New York City Farm Colony and compare the result of suitable employment for the aged with other institutions where the aged inmates are not employed. Compare the mental and physical condition of the inmates in homes where the sexes are segregated with these conditions where they are not segregated. The study of the needs, the peculiarities and infirmities of the aged will show how irrational are our present antiquated methods of dealing with the aged.

I. L. NASCHER, M.D., New York.

Facts Concerning Reported Discovery of Germ of Gas Gangrene

To the Editor:—Information has come to us that reports have been circulated by a number of American newspapers announcing the discovery by us of the germ of gas gangrene and of a serum for the prophylactic and curative treatment of this condition. We were at first tempted to let these reports pass unnoticed, but, on reflection, we feel that they should not go uncorrected.

The only possible foundation for such an announcement is the fact that we did make bacteriologic studies in a series of cases of so-called "gas" gangrene, and that in a number of them, we were able to isolate *Bacillus perfringens*. Our findings have since been confirmed by Dr. Weinburg of the Institut Pasteur, who has been requested by the French government to make a thorough bacteriologic investigation of the condition. As for our reported discovery of a serum for the treatment of "gas" gangrene, that is a "discovery" of the bacteriologic laboratories of the Associated Press, in which so many other wonderful discoveries have originated.

HUNTER W. SCARLETT,
Formerly Resident Physician.
F. A. DESJARDINS,
Resident Physician.
American Hospital of Paris, Neuilly-sur-Seine.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LITERATURE ON ROENTGENOSCOPY OF THE GASTRO-INTESTINAL TRACT

To the Editor:—Please give me information concerning roentgenoscopic diagnosis of diseases of the intestinal tract.

Douglas Ford Robbins, M.D., Minneapolis.

Answer.—The following is a list of literature on this subject:

Mills, R. Walter: Points of Value in Roentgenoscopy of Gastro-Intestinal Tract, The Journal, Oct. 11, 1913, p. 1344.

Chapin, H. D.: Radiographic Studies of Gastro-Intestinal Tract in Infants, The Journal, Oct. 8, 1913, p. 1419.

Case, J. T.: Roentgenologic Observations on Function of Ileocolic Valve, The Journal, Oct. 3, 1914, p. 1194.

Clark, L. P., and Busby, A. H.: Value of Roentgen Analysis of Gastro-Intestinal Tract in Some Types of So-Called Functional Nervous Disorder, The Journal, Feb. 7, 1914, p. 440.

Cannon, W. B.: Early Use of Roentgen Ray in Study of Alimentary Canal, The Journal, Jan. 3, 1914, p. 1.

Carman, R. D.: Technic of Roentgen Ray Examination of Gastro-Intestinal Tract in Interpretation of Screen and Plate Findings, The Journal, Aug. 2, 1913, p. 321.

Albu, A.: Roentgenoscopy in Gastro-Intestinal Disease, *Med. Klin.*, March 1, 1914.

Brown, P.: Roentgenologic Consideration of Relation of Individual Type to Intestinal Stasis, *Boston Med. and Surg. Jour.*, Oct. 15, 1914.

Pfahler, G. E.: Study of Chronic Intestinal Stasis by Means of Roentgen Rays, *Surg., Gynec. and Obst.*, November, 1914.

Marcuse, E.: Roentgen Examination of Stereosis of Small Intestine, *Berl. klin. Wchnschr.*, Oct. 5, 1914.

Eisen, P.: Roentgen Diagnosis of Obstruction in Alimentary Tract, *Wisconsin Med. Jour.*, September, 1914.

Axford, W. H.: Roentgenologic Study of Alimentary Canal, *New Jersey State Med. Soc. Jour.*, July, 1914.

Henriques, A.: Roentgen Examination of Digestive Tract, *New Orleans Med. and Surg. Jour.*, August, 1914.

George, A. W., and Gerber, I.: Observations from the Study of a Thousand Gastro-Intestinal Cases, abstr., The Journal, Oct. 17, 1914, p. 1419.

KELLER'S TUBERCULIN TEST. PLATE

To the Editor:—1. What is Keller's Tuberculin Test Plate?
2. Is it reliable for the early diagnosis of tuberculosis? X. Y. Z.

Answer.—1. Keller's Tuberculin Test Plate is a piece of adhesive plaster about the size of a common bunion plaster, in the middle of which is a circle about 2 cm. (0.8 inch) in diameter containing an ointment-like material. The nature of the salve must be judged by its effects. The following are the directions for applying the Tuberculin Test Plate:

Any convenient place on the abdomen, chest or back may be selected. A little alcohol may be applied if the skin is oily; otherwise it is sufficient to rub gently with dry gauze until very slightly reddened. The parts should be dry when the Plate is applied.

Remove the protective covering, applying the Plate by means of the adhesive, using such force as necessary to cause it to firmly adhere. It should be allowed to remain undisturbed twenty-four hours, at the end of which time it is removed. It is never necessary to apply longer than twenty-four hours.

A positive reaction is evidenced by the appearance of a number of fine red papules. These may be present at the time the Plate is removed, or they may not appear until twenty-four or forty-eight hours later. Also there may be a few present, and more appear later. No opinion therefore should be given until the end of that period.

It is convenient and practicable to designate the reaction by the number of papules: Less than ten, a slight reaction; up to thirty, medium, and larger numbers, a marked reaction.

From the effects described, it seems safe to assume that the material contains tuberculin, and, judging from the mode of application, it is the Moro ointment. This preparation consists of equal parts of old tuberculin and anhydrous lanolin.

2. The Moro test is reliable in case of a positive reaction to determine the presence of tuberculosis in the organism, but it does not discriminate between active and latent tuberculosis. As nearly every person has experienced tuberculous infection before reaching adult life, a large majority of adults give a positive reaction to it. Used by the experienced physician, it may yield valuable information in case of children suspected of tuberculosis. However, as a secret test much needless anxiety will be caused by it.

ATTENDANCE BY PHYSICIAN ON WIFE IN CONFINEMENT

To the Editor:—Is it legal and ethical for a physician to attend his own wife in confinement in the state of Michigan? S. C. J.

Answer.—Yes.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

Alaska: Juneau, Jan. 5, 1915. Sec., Dr. H. C. DeVighne, Juneau.

Arizona: Phoenix, Jan. 5-6, 1915. Sec., Dr. John Wix Thomas, 200 Nat'l Bank of Ariz. Bldg., Phoenix.

Illinois: Chicago, Jan. 13-15, 1915. Sec., Dr. C. St. Clair Drake, Springfield.

Indiana: Indianapolis, Jan. 12-14, 1915. Sec., Dr. W. T. Gott, State House, Indianapolis.

Iowa: Des Moines, Jan. 19-21, 1915. Sec., Dr. Guilford T. Sumner, Capitol Bldg., Des Moines.

Minnesota: Minneapolis, Jan. 5-8, 1915. Sec., Dr. Thomas McDavitt, 814 Lowry Bldg., St. Paul.

New Hampshire: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

New Mexico: Santa Fe, Jan. 11, 1915. Sec., Dr. W. E. Kaser, East Las Vegas.

New York: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

North Dakota: Grand Forks, Jan. 5, 1915. Sec., Dr. G. M. Williamson, Grand Forks.

Oklahoma: Oklahoma City, Jan. 12-14, 1915. Sec., Dr. John W. Duke, Guthrie.

Rhode Island: Providence, Jan. 7, 1915. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Dakota: Pierre, Jan. 12, 1915. Sec. Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 4-5, 1915. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Vermont: Montpelier, Jan. 11-13, 1915. Sec., Dr. W. Scott Nay, Underhill.

Washington: Walla Walla, Jan. 5, 1915. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Wisconsin: Madison, Jan. 12-14, 1915. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

Kentucky June Report

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, June 15-17, 1914. The total number of subjects examined was 11; total number of questions asked, 110; percentage required to pass, 70. The total number of candidates examined was 56, of whom 50 passed and 6 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Chicago College of Medicine and Surgery	(1914)	94
Kentucky School of Medicine	(1908)	73
University of Louisville	(1910) 82; (1912) 88; (1914)	81, 81, 82, 82, 82, 82, 82, 82, 83, 83, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 90, 90, 92.
Eclectic Medical College, Cincinnati	(1914)	82
Jefferson Medical College	(1913)	90
Lincoln Memorial University	(1913) 80; (1914)	82
Meharry Medical College	(1911) 73; (1914)	82
University of Tennessee	(1914)	87
Vanderbilt University	(1913) 94; (1914)	84
FAILED		
Bennett Medical College	(1913)	69
Louisville Medical College	(1906)	60
Louisville National Medical College	(1912)	71*
University of Louisville	(1910) 50; (1911)	74*
American Eclectic Medical College	(1893)	42

* Fell below the required average in one or more subjects.

The following questions were asked:

ANATOMY

1. Name the bones entering into the formation of the pelvis and give the articulations. 2. Describe the tibia, giving its articulations and points of muscular and ligamentous attachments. 3. Describe the diaphragm and name the openings connected with it. 4. Describe the right and left subclavian arteries, giving points of difference between them. 5. Give the origin of the superior mesenteric artery and its distribution. 6. Give the origin and distribution of the sciatic nerve. 7. Name the membranes of the spinal cord, giving their relations. 8. Name and describe the fissures of the brain. 9. Locate and describe the ligamentum teres. 10. Describe the inguinal canal.

PHYSIOLOGY

1. Name the different layers composing the walls of the stomach and give the function of each. 2. Name and discuss several causes of indigestion. 3. Classify foods and tell how to prepare a substitute for mother's milk on a physiologic basis. 4. Give the origin of the various constituents of the blood and describe its circulation. 5. Describe the kidney and functions of its different parts. 6. Describe the construction of the teeth and tell how to preserve them. 7. What are the functions of (*a*) cornea, (*b*) iris, (*c*) retina? 8. (*a*) What are the

functions of muscles? (*b*) Differentiate microscopically between voluntary and involuntary muscles. 9. Discuss the ventilation of a one-room schoolhouse. 10. How is fat digested?

CHEMISTRY

1. (*a*) What is a carbohydrate? (*b*) A hydrocarbon? (*c*) Give example of each. 2. (*a*) Does the pancreatic juice give an acid or an alkaline reaction? (*b*) To what chemical, or chemicals, is the reaction due? 3. Name two preparations of sodium, giving chemical name and pharmaceutical or common name and symbols. 4. (*a*) Define and give example of a chemical symbol; (*b*) a chemical formula. 5. (*a*) Give an antidote for acute arsenical poisoning. (*b*) How would you prepare it? 6. (*a*) What is a source of ptyalin? (*b*) What effect does it have on starches? (*c*) Do acids decrease or increase its activity? 7. (*a*) What symptoms would lead you to believe you had a case of chronic lead poisoning? (*b*) What is the antidote? 8. (*a*) Give the symbols of silver. (*b*) Potassium. (*c*) Mercury. (*d*) Gold. (*e*) Formula of water. 9. (*a*) What do you understand by the term "oxidation"? (*b*) Give an example. 10. (*a*) Is water an element or a compound? (*b*) What is water, chemically considered?

BACTERIOLOGY

1. Define (*a*) culture, (*b*) asepsis, (*c*) antisepsis, (*d*) disinfection, and (*e*) germicide. 2. (*a*) Give morphology of tubercle bacillus. (*b*) What are the channels of infection? 3. What are aerobic and anaerobic bacteria? 4. What is sterilization? 5. (*a*) What is immunity? (*b*) How is it acquired? 6. (*a*) Describe the Klebs-Loeffler bacillus. (*b*) Discuss diphtheritic antitoxin. 7. (*a*) Of what significance is the Widal reaction in typhoid fever? (*b*) Describe it. 8. Give conditions favoring bacterial growth and antagonistic to it. 9. (*a*) Mention some culture mediums. (*b*) How is a pure culture made? 10. Differentiate between contagion and infection, and the means employed to prevent either.

ETIOLOGY AND PHYSICAL DIAGNOSIS

1. (*a*) Define heart block. (*b*) At what age does it most frequently occur? 2. (*a*) Give etiology of malarial fever; (*b*) of yellow fever, and (*c*) mode of transmission to man. 3. (*a*) Give etiology of endocarditis, and (*b*) the two diseases most frequently leading to it. 4. Mention five frequent causes of asthma. 5. Give etiology of arteriosclerosis. 6. Define physical diagnosis and give names of five methods used in examining the thoracic organs. 7. Enumerate the symptoms of catarrhal jaundice; name two other diseases of this region that may resemble it, and differentiate them from catarrhal jaundice. 8. Enumerate the symptoms and physical signs of diffuse peritonitis, and name six conditions within the abdomen that may simulate it. 9. Describe the natural heart sounds, and the causes of each. 10. Name the causes of ascites, and tell how it may be discovered.

HYGIENE, MEDICAL JURISPRUDENCE, MENTAL AND NERVOUS DISEASES

1. In what way and how is carbon dioxid deleterious to health? 2. How would you construct a camp for those suffering from a contagious disease? 3. Name four diseases that are communicable to man through cow's milk. 4. How would you thoroughly inspect meat for the market? 5. What rules would you advise to prevent the spread of tuberculosis? 6. (*a*) Diagnose and treat infantile paralysis; (*b*) locomotor ataxia. 7. Describe and treat herpes zoster. 8. How would you take a dying statement? 9. How would you construct a post-mortem examination in a case of suspected arsenic poisoning? 10. Diagnose and treat a case of psoriasis.

OBSTETRICS AND GYNECOLOGY

1. Define (*a*) ovulation, (*b*) menstruation, (*c*) abortion, (*d*) version, and (*e*) subinvolution. 2. What is (*a*) ovaritis? (*b*) salpingitis? (*c*) What is the most frequent cause of each? 3. (*a*) What is dysmenorrhea? (*b*) Give causes and symptoms. 4. (*a*) What is puerperal septicemia? (*b*) What precaution would you take to prevent it? 5. (*a*) Give function of placenta. (*b*) What difficulties may you expect to encounter in its delivery? 6. (*a*) Tell exactly how you would manage a breech presentation. (*b*) What precautions would you take? 7. (*a*) Give indications for the use of forceps. (*b*) State how you would apply them. 8. (*a*) What is the most frequent cause of post-partum hemorrhage? (*b*) How would you manage a case? 9. Give methods of diagnosing pregnancy at the end of the tenth week. 10. (*a*) What is eclampsia? (*b*) Under what condition may you expect it?

OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY

1. Under what circumstances would you advise the enucleation of the eyeball? 2. Differentiate between trachoma and blepharitis marginalis. 3. Give etiology and symptoms of glaucoma. 4. Give symptoms and etiology of iritis. 5. Under what circumstances would you puncture the membrana tympani? 6. Give etiology, symptoms and probable sequelae of acute otitis media. 7. (*a*) What are the symptoms of impacted cerumen? (*b*) How would you manage a case? 8. (*a*) Give etiology of mastoid abscess. (*b*) How would you diagnose same? 9. (*a*) What are the indications for intubation? (*b*) Give technic of the operation. 10. Give symptoms and management of a case of postnasal polypi.

PATHOLOGY

1. Name the varieties of leukocytes, and give the percentage of each found in normal blood. 2. Name and describe the pathology of the various stages of lobar pneumonia. 3. Give the pathologic changes found in acute infantile paralysis (anterior poliomyelitis). 4. Differentiate between gross symptoms of benign and malignant tumors of the breast. 5. Differentiate between the microscopic examination of (*a*) fibromas, (*b*) sarcomas, and (*c*) carcinomas of the breast. 6. Give the pathology of ulcer of the stomach. 7. Differentiate between ulcer and carcinoma of the stomach. 8. Describe the stomach and liver found post mortem in a chronic alcoholic. 9 and 10. Select four of the five slides and make a diagnosis.

PRACTICE OF MEDICINE AND MATERIA MEDICA

1. How would you diagnose a case of diphtheria, describe the treatment in detail and tell when it would cease to be infectious. 2. How would you confirm a diagnosis of malaria, and how would you treat it? 3. Describe in detail the treatment of syphilis. 4. What symptoms would lead you to suspect hookworm disease, and how would you confirm the diagnosis? 5. Give the treatment in detail for a 12-year-old child weighing 72 pounds having hookworm disease. 6. Give physiologic action, therapeutics and dosage of tincture of aconite. 7. Give in detail the prevention and curative treatment of tetanus and discuss the physiology of each step. 8. How would you treat an acute suppurative peritonitis? 9. Tell how to immunize a patient against typhoid fever. 10. How would you treat chronic constipation and how would you prevent it?

SURGERY

1. How would you treat a fracture of the femur? 2. Give diagnostic symptoms of fracture of the base of the skull. 3. How would you recognize an abscess of the appendix and what treatment would you advise? 4. How would you recognize intestinal obstruction and what treatment would you advise? 5. If the foot were crushed at the ankle where would you advise amputation, and why? 6. What treatment would you advise in a depressed fracture of the vault of the skull? 7. How would you treat a Colles' fracture of the forearm? 8. What would be the indications for operation in a penetrating wound of the abdominal wall? 9. How would you treat a comminuted fracture of the olecranon process of the ulna? 10. What treatment would you advise in cancer of the breast?

Michigan June Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 9-11, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 57, of whom 56 passed and 1 was conditioned. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Chicago College of Med. and Surg.	(1912)	87.2
University of Illinois	(1914)	86.5
University of Louisville	(1914)	76.5
University of Michigan, Dept. of Med. and Surg.	(1910) 85.1; (1912) 89.6; (1913) 78.4, 85; (1914) 83.1, 83.5, 84.7, 84.9, 85.6, 86, 86.3, 86.3, 86.3, 86.4, 86.5, 86.8, 87.3, 87.4, 87.5, 87.5, 87.7, 87.7, 87.8, 87.8, 87.8, 87.9, 87.9, 88, 88, 88, 88.2, 88.3, 88.3, 89, 89.1, 89.4, 89.6, 91.9.	
University of Michigan, Homeo. Med. College	(1914) 79, 80, 80.3, 80.4, 80.9, 81.1, 84.5, 85.1, 85.7, 86.3, 86.3, 86.9, 87.6, 88.	
University of Toronto	(1895)	89

One candidate, a graduate of the University of Michigan, Homeopathic Medical College, 1914, was conditioned in one subject.

Missouri February Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at St. Louis, Feb. 9-11, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 47, of whom 38 passed and 9 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery	(1913)	75
Rush Medical College	(1913)	84.2, 84.3, 86.4
Kentucky School of Medicine	(1899)	75
University of Louisville	(1898)	79
Tulane University of Louisiana	(1910)	82.8
Johns Hopkins University	(1913)	80.3
Tufts College Medical School	(1898)	82.1
American Med. College, St. Louis	(1881) 75; (1903)	75
Barnes Medical College	(1900) 75; (1907) 75; (1910)	75
Beaumont Hosp. Med. Coll., St. Louis	(1889) 75; (1893) 75; (1900)	75
Homeopathic Medical College of Missouri	(1900)	75
Kansas City Hahnemann Medical College	(1913)	83.2
Missouri Medical College	(1881) 75; (1890)	75
St. Louis College of Phys. and Surgs.	(1905) 75; (1913) 75,	75.5
St. Louis University (1904) 75; (1913) 82; (1914) 81.5, 82.2, 82.6, 87.1.		
University Medical College, Kansas City	(1903)	75
Washington University	(1893) 75; (1894) 75; (1913)	81.6
Starling Medical College	(1895)	83.1
University of Texas	(1913)	86.6, 87.3, 88.3

FAILED		
Kentucky School of Medicine	(1907)	68.2
Barnes Medical College	(1910)	69.1
Ensworth Medical College	(1912) 67.3; (1913)	67.3
St. Louis College of Physicians and Surgeons	(1909) 59.8; (1913) 47.6, 50.4, 51.	
University Medical College, Kansas City	(1911)	65

New Mexico July Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fe, July 13-14, 1914. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. One candidate was examined and passed. Eleven candidates were licensed on credentials. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
Southern College of Medicine and Surgery	(1903)	83

LICENSED UPON CREDENTIALS	Year Grad.	Total No. Examined
University of Colorado	(1913)	1
Northwestern University	(1913)	1
Rush Medical College	(1890)	1
University of Louisville	(1912)	1
Tulane University of Louisiana	(1909,1) (1914,1)	2
Baltimore Medical College	(1911)	1
Detroit College of Medicine	(1900)	1
Kansas City Hahnemann Medical College	(1910)	1
Missouri Medical College	(1885)	1
National University of Mexico	(1888)	1

Wisconsin July Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Milwaukee, June 30-July 2, 1914. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 66, of whom 63 passed and 3 failed. Thirty-two candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
Bennett Medical College	(1913)	82
Chicago College of Med. and Surg	(1914)	77, 82
Northwestern University	(1914)	86
Rush Medical College	(1913) 84; (1914) 87, 87, 89	
Univ. of Illinois	(1913) 81, 89; (1914) 81, 81, 84, 84, 86, 86	
Johns Hopkins University	(1908) 81; (1914) 84, 90	
Harvard University	(1914)	87
Marquette University	(1913) 76, 84; (1914) 77, 77, 78, 79, 79, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 87, 88, 89.	

FAILED		
Chicago College of Med. and Surg	(1910)	69
University of Louisville	(1913)	67
Milwaukee Medical College	(1912)	65

LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College		
University of Colorado	(1902)	Colorado
American College of Med. and Surg	(1905)	Illinois
Chicago College of Med. and Surg	(1910) (1911) (1912, 2) (1914)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago	(1904) (1913)	Illinois
Northwestern University	(1910) (1912) (1913	Illinois
Rush Medical College	(1911, 3) (1913, 2)	Illinois
University of Illinois	(1912)	Illinois
Physio-Medical College of Indiana	(1897)	Ohio
Drake University	(1907)	Minnesota
State Univ. of Iowa, Coll. of Homeo. Med.	(1904)	Iowa
Univ. Med. College, Kansas City	(1903) (1907)	Missouri
Albany Medical College	(1903)	New York
Cornell University	(1899)	Minnesota
Jefferson Medical College	(1903)	Iowa
Medico-Chirurgical College of Philadelphia	(1903)	Penna.
University of Pennsylvania	(1909)	New York
Woman's Medical College of Pennsylvania	(1901)	New York
University of Texas	(1902)	Texas
Royal University of Christiania, Norway	(1890)	Iowa

Tennessee Reciprocity Report

Dr. A. B. DeLoach, secretary of the Tennessee State Board of Medical Examiners, reports that two candidates were licensed through reciprocity during January and February, 1914. The following colleges were represented:

LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College		
Tulane University of Louisiana	(1896)	Mississippi
University of Virginia	(1912)	Virginia

Book Notices

PRÉCIS DE CHIRURGIE DE GUERRE. By Edmond Delorme, Médecin Inspecteur Général de l'Armée. Cloth. Price, 4 francs, 50. Pp. 218, with illustrations. Paris: Masson et Cie, 1914.

In the preface the author says that "this compend has been set forth hastily after the unexpected declaration of war, during the mobilization and since the beginning of hostilities, and that too while in Paris or during the course of my missions, no matter where, during the too short moments of the day and especially during the hours of the night. I know its imperfections, but writing it chiefly from memory it expresses a vision broader and more certain than if it had been otherwise prepared." When it is understood that this compend was written in less than sixty days at odd moments during the busiest time imaginable of the General Medical Inspector of the French army, and that it contains matter showing the effects of the modern high-velocity bullets, bearing date as late as August 20, one may have some realization of the magnitude of the task accomplished. The author describes the firearms in use by the various nations at war, and discusses the ballistics of each and the character of the wounds produced by the different projectiles. It is interesting to note what the author has to say regarding the use of the dumdum bullet, about which so much has been said from time to time in the daily press. "At the beginning of every war there is a question of the employment of explosive bullets, there is a question of it to-day. We have seen the wounded in this campaign who have been the cause of the reproduction of this error. The frightful havoc which has been seen is so different from that commonly observed that it seems impossible to connect them with the action of a bullet which in other respects makes only a minimum aperture. It is, however, not so. The explosive wounds in these cases are produced by bullets of exceedingly high velocity, more or less broken into fragments in their course through the tissues. The fury with which our soldiers many times have been precipitated upon our enemies, their attack at very short range, account sufficiently for these cases without one having to search for other explanations." The rather common belief that the modern small caliber high velocity bullet produces a simple, small, clean-cut, perforating wound, which has therefore given rise to the term "humane bullet," seems not to be borne out by the experiences of the author. He says: "It is indeed stretching it too far for the sake of a paradox to apply the term 'humane' to a projectile which traverses many men at short range and which can exercise its murderous action in a zone of more than 3,000 meters. The greater the velocity the more serious the lesions produced and the graver the fractures of the bones. . . . At short range the mortality is appalling." Bullet wounds of the head, chest and abdomen are fully considered, and the treatment of all bullet wounds is characterized by a tendency to careful, sound conservatism. The chief object of the compend is to furnish that great horde of surgeons, who have been suddenly called on to go to the front, with a concise statement of the principles and exigencies of military surgery. This it does in an excellent manner, and gotten out as it was under the most trying circumstances, is a monument to the indefatigable energy of the author.

PSYCHOLOGY, GENERAL AND APPLIED. By Hugo Münsterberg. Cloth. Price, $1.75 net. Pp. 487. New York: D. Appleton & Co., 1914.

This book is intended obviously for the use of classes in college and university. Only an actual test can show its value for this purpose, but the author has struck the keynote of practice by furnishing a book which teaches psychology as a means to an end rather than an end in itself. The arrangement is somewhat different from that of the ordinary text. First, the author has omitted the details of anatomy of the nervous system which were a common feature of other books. He precedes the main discussion by an introduction which states the realm of the subject. Book I is devoted to causal psychology, which includes fundamental principles and is characterized as "psychology without a soul." Book

II, on purposive psychology, gives the internal meaning, the understanding of the soul. In Book III, on applied psychology, the author goes farther than is usual in books on this subject. The author points out in the preface that he considers not only individual, but also social processes, that is, the relations of the individual to the community. In the section on applied psychology special sections are devoted to educational, legal, economic, medical and cultural aspects. As a guide to some of the big possibilities of the subject the section on medical psychology is interesting. A bibliography of important English references is added.

DIE AKUTE UND CHRONISCHE INFEKTIÖSE OSTEOMYELITIS DES KINDESALTERS. Auf Grund Eigener Beobachtungen und Untersuchungen. Von Dr. Paul Klemm, K. R. Staatsrat, Oberarzt des Krankenhauses vom Roten Kreuz. Paper. Price, 9 marks. Pp. 261, with 8 illustrations. Berlin S. Karger, 1914.

This monograph is based on a study of 320 cases of osteomyelitis in children which have come under the author's observation during the past ten years. The author compares the bone marrow with lymphatic tissue, and although he acknowledges that some of the medullary cells show specific differences so that these may be regarded as a specific tissue, yet the bone marrow as a whole he considers as belonging to the lymphatic system. With this conception of the bone marrow in mind he attempts to show that osteomyelitis is essentially a disease of lymphatic tissue and that its course is exactly that of a disease of this tissue in other locations. The specific characteristics of the disease are not due to any specificity of the diseased marrow tissue, but find their explanation in the fact that lymphatic tissue here is enclosed in rigid bony walls which are affected by the diseased marrow in a particular manner. The author thinks that too much attention has been devoted to the changes in the osseous tissue and too little to those in the marrow and that an explanation of the various changes in the osseous tissue is to be sought in the disease of the lymphatic tissue. The arguments in support of these views are well presented, and the points brought out are illustrated by numerous case histories. It is an interesting, instructive and readable book.

OPERATIVE SURGERY OF THE NOSE, THROAT AND EAR FOR LARYNGOLOGISTS, RHINOLOGISTS, OTOLOGISTS AND SURGEONS. By Hanau W. Loeb, A.M., M.D., Professor of Ear, Nose and Throat Diseases in St. Louis University, in Collaboration with Joseph C. Beck, M.D., R. Bishop Canfield, M.D., and Others. Vol. I. Cloth. Price, $6. Pp. 390, with 409 illustrations. St. Louis: C. V. Mosby Company, 1914.

This book is a worthy addition to the numerous treatises on this special subject. It will enable the operator to comprehend very clearly the most advanced technic in this field of surgery, without spending unnecessary time in going over the pathology, etiology or symptomatology, with which he is supposed to be familiar. The object of the book is to present the method of operating, the indications and contra-indications, after-treatment and results. The work is to be especially commended for admirable illustrations, most of which are original. The author has been assisted by a number of collaborators all of whom are well known in this special field, and the sections devoted to laryngoscopic and gastroscopic examinations, as well as the chapter on plastic surgery, are especially commendable. The second volume of the work, not yet issued, is to be devoted to the more specialized surgery of the nasal cavities, the pharynx and larynx.

A TEXT-BOOK OF MILITARY HYGIENE AND SANITATION. By Frank R. Keefer, A.M., M.D., Lieutenant-Colonel, Medical Corps, United States Army. Cloth. Price, $1.50 net. Pp. 305, with 47 illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author is professor of military hygiene in the United States Military Academy, West Point. As a guide to the layman who takes service in a medical corps the book may be considered as meeting the requirements. It throws in for good measure a chapter on alcohol and narcotics which cannot harm and may do good. The physician who accepts army work should know what the book contains in order that he may be able to correlate his work to the best advantage with that of other officers.

Miscellany

In the Field Hospitals

Prof. Dr. Rudolf Lennhoff contributes an article to the *Vossiche Zeitung*, which gives in a chatty way a great deal of information regarding field hospitals under war conditions. Dr. Lennhoff says:

It is part of the nature of the field hospital that the physicians who have established it cannot remain there long. If the body of troops to which they are assigned advances they must follow in order to be able to give succor to new wounded at another place. As soon as the conditions for an advance seem to be favorable and one may assume that the already occupied territory can no longer be won back by the enemy, the army of physicians follows. These physicians relieve those of the field hospital, which then becomes a war hospital, at whose disposal there are usually more ample means for the care of the wounded. Thus it was with us. One day new physicians came from Brussels well equipped with new supplies from which we could complete our stock. With them came a large number of volunteer nurses and German sisters of the Red Cross. After the conclusion of the business affairs connected with the transfer our wagons were hitched up again; our column left this field of endeavor in order to await somewhere else the order for new work. We took a hearty farewell from the wounded. There was scarcely one who grumbled at his fate, except about the fact that he was no longer permitted to fight at the front. A few days ago we saw a sergeant through whose stomach a bullet had passed from the front to the rear, five weeks before, and who was now seeking his division in order to fight against the enemy anew.

The ambition of the majority is to get at the enemy again as quickly as possible. Many are permitted this privilege with astounding rapidity, even when the number and bloody condition of the bandages made the case appear a very heavy one.

One man was brought in with thick bloody bandages around his head, hand, breast and abdomen, all as he says the result of a single shot. The man was lying flat on the ground when the bullet hit him. It first passed through the nail on his left thumb, then the upper edge of his right ear, had bored through the ear behind the ear lobe, then penetrated under the collar bone into the muscles of the breast, the ribs were slightly grazed and, finally, a cut, 3 centimeters in length, was made in the skin of the abdomen. Altogether there were ten wounds and all of them were harmless. This is easily comprehensible because of the nature of the wounds, but the harmlessness of other shots seems like a miracle. A sergeant of cavalry was brought on a peasant's cart from one of the hot fights at Termonde. He had safely passed through five dangerous parole rides in spite of heavy shooting, and the iron cross decorated his breast. This time a bullet had struck him. Anxious to carry out his orders, he had ridden on until a second shot stretched his horse on the ground. His comrades had to go on. It had taken him nearly an hour until he was able to creep out from under the dead horse. With difficulty he had dragged himself a few kilometers further. Then he met two peasant women with a dog cart. He rode on this for two hours until he met a column whose physicians made the first bandage for him. Then the horse cart was obtained on which he was brought to us. The shot had passed in an almost straight line through his thighs without touching the bones and the important blood-vessels and nerves. He came into the same room in which a sergeant lay, who was in daily life an attorney at the supreme court. A bullet had penetrated through his neck from right to left and had likewise not touched any vital parts. The pressure of the interior bleeding caused nerve pains in his hands, but these were diminishing from day to day. A bullet had entered the neck of another man obliquely from above under the ear lobe and had emerged on the other side next to the larynx without causing any damage. Three Belgian soldiers were also faring comparatively well. Men of the sanitation company had found them one morning lying in the bushes at the edge of the field. They had attempted three times in the course of the day to get them out, and every time hostile fire had driven them back until the evening darkness had concealed them. All three were heavily wounded. Two had lain outside for five, the other one for eight days; after their few provisions had given out they had lived from beet roots. The majority of our German wounded consisted of reservists and members of the "landwehr." All of them were splendid fellows. It was a pleasure to chat with them. When they told of their marches, of their patrols and fights, no one could notice that they were people whose terms of active duty was long past and who had left the shop, the estate, the office chair and the school platform only a few weeks ago.

Don'ts for Nurses

1. Don't forget to be on hand when the doctor is calling, and stay until he goes and write down all orders. 2. Don't ever appear in sick room with a "long face," it matters not what may have been said by the patient, as you must remember always that you are dealing with one who is not normal, a sick brain, whose emanations are not what they would be, well. 3. Don't ever confer with or have anything to do with the servants of the household, except when business calls, and then only in carrying out the doctor's orders. Always treat help with kindness. 4. Don't forget

that you belong to a profession; never be too intimate with any one around the house. 5. Don't ever tell the household what the doctor says—don't gossip. 6. Don't forget that the doctor should give prognosis and diagnosis. 7. Don't fail to anticipate anything possible that could contribute to the comfort of your patient. 8. Don't forget that noises must be avoided. Your shoes must not squeak. Noisy shoes may seem a small matter to you, but at times will greatly disturb your patient. Move furniture softly. 9. Don't forget that neatness about the patient's room, as well as yourself, is absolutely essential. 10. Don't forget that your teeth must be beyond criticism, as the breath is foul if they are dirty or decayed. 11. Don't forget you must serve your food in an appetizing way, be it a glass of buttermilk or a tray full of dishes. 12. Don't ask sick patients what they want to eat. 13. Don't forget that promptness is everything. The patient must not remind you of the time for medicine, food, bath, etc. 14. Don't ever offer an excuse of any description for anything either to doctor or patient. 15. Don't whisper about the sick room. 16. Don't forget that cleanliness is next to godliness. 17. Don't slam doors. 18. Don't ever forget that you stand between the dead and the living—and your mission is to relieve God's sufferers, and *do be amiable*.—J. D. Griffith, M.D., Kansas City, Mo.

Protection Against Cold for Troops in the Field

A German translation has recently appeared of a Japanese work describing the measures to protect against cold which were found most effectual in the Japanese army during the winter campaign in Manchuria. Every man had an extra pair of boots, mittens and foot cloths, to change at night. They were made to eat often and to keep awake those inclined to drop to sleep on the march or in changing guards. They were kept from doing exercise that would make them sweat, and they were not allowed to lie down on snow. When straw was not available, they had to shovel the snow away so as to lie on the ground. The clothes and shoes were made larger for winter than for summer wear, to allow for layers of air. The buttonholes and other openings were protected with special care, after small frozen areas had been found on the chest of some of the soldiers, corresponding to the buttonholes. The fingers and feet were rubbed with tallow or other unsalted fat, and mittens were worn over gloves. The mittens were sometimes packed with straw or feathers and the shoes with horse bedding. Fur keeps out the wind better than woolen, and a fur abdominal band proved a great help in extremely cold weather. Flannel suspensories were found indispensable to protect at the latrines. Muffs of fur or felt and wristlets of wool or fur are highly recommended. Whenever the hands were found frozen, it was learned that the men had been wearing knitted gloves. The foot cloth worn instead of socks can be dried in emergencies by wearing it next the body. Wrapping the toes in paper, or the whole foot in a pig bladder was also found useful at times. Battalions were provided with flint and steel for starting a fire when matches were lacking or too damp to light.

The "Work Treatment" of Organic Diseases

One of the distressing phases of many crippling diseases is the patient's hopeless despair at being unable to hold his place in the world. Herbert J. Hall (*Boston Med. and Surg. Jour.*, Aug. 6, 1914), remarks that, while it has come to be recognized that suitable mental and physical occupation is an indispensable feature of the treatment of the functional nervous diseases, the relief which properly adapted work may afford in organic diseases—chronic, partly disabling conditions—is not yet sufficiently understood. The good results are the saving of the patient's self-respect and interest in life, the economic benefit from his earnings if he is poor, and in some conditions actual physical improvement. In many chronic arthritis cases, Hall says, the muscular spasm and joint thickening yield more readily to purposeful industrial movements than to massage or other remedial exercises. The interest in accomplishing something relieves the muscular tension. In ataxic cases patients grow intensely weary of the meaningless Frenkel exercises. Hall cites the case of a woman apparently doomed to progressive disease of the spinal cord whose gait was greatly improved and whose whole outlook on life was immeasurably brightened through taking up hand weaving, which involves the use of from two to six foot pedals besides the dexterous throwing of a shuttle. In many cases of progressive blindness, it is suggested, a gain would be made if, during the coming on of the blindness, the patient were taught a trade which could be carried on with pleasure and profit after blindness was complete.

A number of institutions have adapted various crafts to therapeutic uses. Hall mentions the state colony for the insane at Gardner, Massachusetts, where practically all of the 1,200 patients are kept at work. Under skilled directions the patients make all their clothing, even producing on the place the material for woolen garments. In addition they raise all their own food-supplies, reclaim land and erect new buildings. The Massachusetts General Hospital has established under its own roof workshops for certain chronic outpatients who would otherwise be unable to find employment. The Burke Foundation in New York City finances a series of workshops for patients with incurable chronic heart disease, who would break down under ordinary industrial conditions, but who are thus enabled to become partially self-supporting, and thereby to retain much satisfaction in life.

Hall warns against several mistakes likely to result in discouragement, such as the employment of meaningless work which results in nothing useful or beautiful and permitting overwork or any work at all in unsuitable conditions or at unsuitable times. At the same time, he believes that the risk of overdoing has been largely exaggerated, and that the injunction to "make the patient comfortable; do not bother him with work" too often means a lifetime of unhappiness.

It is best to allow the patient to do work which follows the lines of his old occupation if this is possible. Still, patients whose ordinary vocation is rendered unsafe, sometimes take up new trades with surprising facility. Thus a blacksmith or teamster with a badly compensated heart may become a good hand weaver or maker of clothing. Almost any trade may be adapted. "The important thing to remember is that work should be supplied in some form, even in organic illness, whenever the conditions can be made possible."

Acute Toxic Reaction to Atophan

G. Marañon, editor of the *Revista Clinica de Madrid*, reports from his own practice, in the issue of July 30, 1914, two cases of acute intoxication from atophan. The first patient was a man long suffering from gout rebellious to ordinary measures. Under a course of atophan he improved. A few months later the symptoms returned and atophan was prescribed again, when symptoms of acute intoxication developed, chills, fever, great depression and a red eruption on the head and neck resembling acute erysipelas, with extraordinary proportions of uric acid in the extremely scanty urine. A month later the same syndrome reappeared anew when he began to take atophan again. The man died a few months later of tuberculosis. The second patient was a young woman who was also improved by atophan after long suffering from pain in one wrist. The pain returning some months later, she took one tablet of atophan and at once developed acute intoxication like the syndrome described in the first patient, with intense pruritus, but no eruption or exceptional uric-acid output. Marañon attributed the symptoms to casual contamination of the atophan, but the same syndrome returned even more severe a few weeks later after taking a single tablet obtained from another source, other patients taking without reaction tablets from the same package. Oyarzabal has recently reported a similar case in a man long subject to gout who had previously improved under atophan but presented the signs of an acute intoxication after taking novatophan. The eczema-like dermatitis which developed in this case proved very rebellious. This man had had dermatitis develop years before when a skin affection was being treated with formaldehyd.

Medicolegal

Law Requiring Washrooms for Employees Constitutional

(People vs. Solomon (Ill.), 106 N. E. R. 458)

The Supreme Court of Illinois holds constitutional an act to provide for washrooms in certain employments to protect the health of employees and secure public comfort, approved June 26, 1913. The court held that a similar act passed in 1903, which applied only to the owners or operators of coal mines, was unconstitutional on the ground that it was special or class legislation; that the legislature could not require the owners or operators of coal mines only to provide and maintain washrooms for their employees, for the reason that such a law would place on mine owners or operators a burden not borne by other employers of labor, and such enactment would be special legislation. Any act of this kind, to be valid, must apply to all employers of labor similarly situated or to all employers of labor where conditions obtain which would require washrooms. This object was accomplished in the act of 1913 by naming in the first section of the act, specifically certain employments to which the act applies, namely, of every owner or operator of a coal mine, steel mill, foundry, machine shop, followed by the words, "or other like business in which employees become covered with grease, smoke, dust, grime and perspiration to such extent that to remain in such condition after leaving their work without washing and cleansing their bodies and changing their clothing, will endanger their health or make their condition offensive to the public." The purpose of the law is to promote the health and welfare of employees in certain lines of business where the conditions are such that every facility should be afforded for cleanliness, and to provide for the comfort and welfare of those with whom such employees come in contact after leaving their places of employment. The right of the general assembly to enact such laws is under the police power of the state. Nor, as the court construes this law, is it ambiguous and uncertain. It applies to the employments specifically mentioned in the act and to all other like business of permanent character where the same conditions prevail and where there would be the same reasons for the law to apply.

Liability for Wrongful Removal of Typhoid Fever Patient—Admissible Evidence

(Lynch vs. Rosemary Manufacturing Co. (N. C.), 83 S. E. R. 6)

The Supreme Court of North Carolina says that, the jury having accepted the plaintiff's version of the removal from one of the defendant's houses of his wife while sick in bed with typhoid fever, and having rendered a verdict that the defendant unlawfully and wrongfully caused her death, the court finds no good reason for disturbing their conclusion on the issue fixing liability on the company. But the court holds that there was error in an instruction as to the amount of damages, wherein the jury were told they should take all the evidence and say what the wife's earnings would have been during the balance of her life, and about how long they found she would have lived. The rule established by the decisions of this court for the admeasurement of the damages for this kind of an injury is that it is the present net value of the life which has been wrongfully taken. For that error the judgment in the plaintiff's favor for $2,500 is reversed and a new trial is granted on the issue as to damages.

It was urged for error that some of the expert witnesses were allowed to give it as their opinion that the removal was the cause of the wife's death, as it violated the rule that a witness may not express an opinion on the very question at issue between the parties. But the questions objected to were clearly within the rule for the reception of such evidence, being opinions of medical experts as to the cause of the patient's death, predicated on the symptoms of the patient and the attendant facts, assumed to have been found by the jury.

Nor does the court think that there was error in asking a medical witness, on cross-examination, if all recognized medical authorities do not teach that typhoid fever patients must not be moved, if possible to do without it, after the witness, who had treated the patient, had testified for the defendant in effect that the removal, in his opinion, "had not unfavorably affected the patient in this instance, and that, on the facts of the case, would likely increase her chances for recovery." It is very generally recognized that extracts from medical books are not admissible in evidence, and for the very sufficient reason that the author does not write under the sanction of an oath and has not been subjected to cross-examination. Moreover, the decisions of this state are to the effect that statements from these books may not be presented as such in the arguments of counsel nor introduced by means of questions put on cross-examination, as by reading an opposing opinion from a text-book and asking the witness "if it is or is not true." The principle, however, is not as exigent in case of cross-examination, and when a witness has testified as an expert, professing to have special training and knowledge from standard works of his profession, a general question of this kind may be allowed with a view of testing the value of his opinion.

Assured Having Had Other Complaints than One Causing Death

(Cunningham vs. Modern Brotherhood of America (Neb.), 148 N. W. R. 918)

The Supreme Court of Nebraska holds that where the assured, shortly prior to making his application for membership in the defendant association, was treated for catarrh in the head, and still prior to that time had been treated for lumbago or rheumatism in the back, but there was no evidence to show that the particular disease which caused his death had been contracted before the beneficiary certificate was issued, it would not be considered that an inquiry could be made as to whether the disease of which he died was latent in his body. The fact that he had other complaints than the particular one which caused his death placed the beneficiary under no obligation in case of suit to show that the assured was sound as to the particular complaint causing his death at the time that the certificate was issued and he was admitted to membership. In an action on a beneficiary certificate it is not proper to place the burden of proof on the beneficiary to show that, at the time the certificate was issued, the assured was free from the particular infirmity which ultimately caused his death. Persons engaged in a life insurance business should be required to take the risk that properly belongs to the business, and the right of the beneficiary to recover should not be made to depend on the skill, intelligence and accuracy of knowledge possessed by the assured touching his own physical condition.

Liability for Causing Malarial Fever

(Rice vs. Norfolk-Southern Railroad Co. (N. C.), 82 S. E. R. 1034)

The Supreme Court of North Carolina affirms a judgment in the plaintiff's favor for damages alleged to have been due to the defendant having negligently permitted one of its drains to become clogged, ponding water under the plaintiff's house, with the result, as witnesses testified, of causing his children, aged, respectively, 13, 15 and 18 years, to have malarial fever. The court says that there was evidence of the cost of the physician's bill and medicine and of the plaintiff's loss of the services of his children. There was also the testimony of the physician that the ponded water bred mosquitoes whose bite caused malaria. It is now the accepted doctrine of the medical profession that malaria is transmitted by the bite of a certain kind of mosquito, anopheles stegomyia, and that these mosquitoes are bred in standing water. True, counsel for the defendant expressed his belief that mosquitoes were only bred in running water, and doubted the correctness of the doctrine that malaria was transmitted by their bite; but there was the testimony of the physician to that effect, and the trial court properly left the matter, being one of fact on the testimony, to the jury. Indeed, there was no evidence to the contrary.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Western Surgical Association, Denver, Dec. 18-19.

JOINT MEETING OF THE NEW ENGLAND PEDIATRIC SOCIETY, THE PHILADELPHIA PEDIATRIC SOCIETY AND THE PEDIATRIC SECTION OF THE NEW YORK ACADEMY OF MEDICINE

Held in New York, Nov. 5, 1914

DR. WILLIAM M. POLK in the Chair

Experimental and Clinical Studies in Hemolytic Jaundice, with Special Reference to the Effects of Splenectomy

DR. EDWARD B. KRUMBHAAR, Philadelphia: The experiments which Dr. Pearce, myself and our colleagues have been carrying on for the past three years, though at first concerned with the relation of the spleen to hemolytic jaundice, soon opened up to us the broader problem of the relation of the spleen to blood formation and destruction in general. Our first experiments confirmed and elaborated the earlier observations of Banti and Joannovics that it was more difficult to produce jaundice by means of hemolytic serum in splenectomized than in normal dogs. Attempts to explain the cause of this phenomenon, which was directly related to clinical splenectomy for the cure of various conditions associated with hemolytic jaundice, led us to study the blood changes following splenectomy. We found that anemia always developed, reached the maximum about the third week and dropped to normal in about ten months. Pearce, Karsner and Peet find that the resistance of the red cells is increased after splenectomy both to hypotonic salt solution and to immune serum. Austin noticed that the greatest resistance to jaundice occurred at the same time as the greatest anemia developed. I have found the same resistance and have concluded that the phenomena were partly due to the more resistant erythrocytes, and partly to the fact that less blood is destroyed because there is less blood to be destroyed. In testing the blood-forming powers of the spleen by making a comparison of the blood going to and coming from the organ, some authorities assert that they have found more red cells, white cells and hemoglobin in the splenic vein, but our experiments along these lines were negative and it seems that we must accept the dictum that red cells at least are formed only in the bone marrow. Asher and his pupils have offered as an explanation of the anemia following splenectomy that increased amounts of iron are lost through the stools, but here also our experiments have failed to confirm such an explanation. We found, however, that injection of splenic extracts intraperitoneally have a marked temporary effect in raising the erythrocyte count, the leukocytes and hemoglobin, which is presumably due to the stimulation of the bone marrow. A possible explanation of the anemia following splenectomy is, therefore, that the bone marrow is deprived of a stimulating hormone, and the explanation of the later recovery from the anemia may be found in that the lymph-nodes found enlarged after splenectomy have presumably taken over some of the function of the spleen. Although splenectomized dogs showed less tendency to jaundice when hemolytic agents were administered, nevertheless such agents caused a greater fall in the blood counts, a more lasting damage, and a greater fragility of the red cells than in normal dogs. Apparently the lessened tendency to jaundice is connected in some way with the anemia caused by splenectomy, while the lessened power to recover from the hemolytic anemia must be attributed to the loss of some specific substance from the spleen. Banti has shown evidence of special hemolytic activity of the splenic extracts and of dissociated hemoglobin in the splenic vein, but our observations have failed to substantiate these claims. The unsaturated fatty acids are well known as hemolytic agents and the lessened blood destruction after splenectomy may thus be explained.

A review of the history and a detailed description of the different types of primary splenomegaly with anemia, namely, Gaucher's, Banti's, von Jaksch's and the two types of hemolytic jaundice, the Hayem-Widal, or acquired form, and the Chauffard-Minkowski, or congenital or hereditary form, show that Gaucher's disease has but little in common with the other types of splenic anemia and though the negative character of the symptoms might cause it to be confused with Banti's disease, pathologic examination should admit of a proper differential diagnosis. Although the etiology of Banti's disease is unknown, evidence points to the close causative relationship of the spleen. One would not expect the removal of a largely fibrotic organ to be attended with marked somatic changes, and it is in the earlier stages of the disease that splenectomy has proved most beneficial. The acquired and congenital types of hemolytic jaundice with splenomegaly possess rather characteristic differences and I deem it advisable to follow the Continental custom and consider them as independent conditions. In the congenital type the resistance of the red blood cells to hypotonic salt solution is much diminished, and this furnishes a simple differential test according to the technic which we used.

The cardinal symptoms of these types of hemolytic jaundice with splenomegaly are a chronic enlargement of the spleen, existing with an acholuria, non-obstructive jaundice and anemia, frequently paroxysmal in character and varying in intensity. Increased blood destruction is indicated by increased urobilin in the urine, and various characteristic changes are found in the blood; the red cells show diminished resistance to hypotonic salt solution; there is an increased number of reticulated cells with vital staining, and in the acquired form the phenomenon of auto-agglutination of the red corpuscles. In the congenital form the subjects are more often icteric than sick, while the acquired form is usually ushered in by a definite attack of sickness, the anemia becomes more grave, and the patient is distinctly more anemic than jaundiced. The congenital form seems to be more of an inherited dystrophy of the hemopoietic system, rendering the red blood cells more easily destructible. We have collected reports of eight necropsies and seven splenectomies which showed chiefly congestion of the spleen, especially of the pulp cords, with increased pigment and macrophages. Since therapeutic measures have been so ineffectual, splenectomy seems to offer the most hope for improvement or cure and should be considered, with due regard to conservatism, in all these diseases in which there is evidence of increased blood destruction referable to the spleen. In early Banti's disease and hemolytic jaundice the results of splenectomy have been excellent. In pernicious anemia, although improvement has followed in some cases, the value of splenectomy is more dubious, and this grave operation should be tried only when the indications are clear and other methods have proved unavailable.

Occurrence and Significance of Melituria in Infants Suffering from Nutritional Disorders

DR. OSCAR M. SCHLOSS, New York: Sugar which has been used in metabolism is carried by the general circulation, and it is obvious that sugar which appears in the urine is derived from the blood sugar. Normal blood sugar in infants ranges from 0.07 to 0.11 per cent., figures practically identical with those that obtain for adults. There is a tendency for the blood sugar to maintain a constant level, but striking changes may occur following the ingestion of carbohydrate food. There is often a definite increase in the blood sugar shortly after a meal which reaches its maximum in from one and one-half to two and one-half hours and then decreases. This increase may be effected by starch as well as sugar, though the increase is slower and to a lesser degree. Owing to this fact the blood used for examinations was withdrawn about three and one-half hours after a meal. There is a distinct relationship between increased blood

sugar and melituria. As a rule a continued increase in blood sugar leads to an excretion of sugar in the urine, although this effect may not be immediate. Often the hyperglycemia precedes the melituria for some time. It seems safe to assume that hyperglycemia means a disturbance in the balance between mobilization and consumption of sugar and often signifies a decreased power of burning sugar, provided the patient is afebrile and the diet normal. Most of the early writers considered that the sugar found in the urine of infants suffering from gastro-enteric disorders was lactose derived from the food. Finkelstein and Meyer attached great importance to melituria in nutritional disorders. They divided the cases into two groups: 1. Those in which the appearance of lactose in the urine was considered as indicative of an intestinal lesion through which lactose was absorbed before it was split by the inverting enzymes of the intestinal secretion. 2. When galactose was found in the urine, and it was thought that the underlying cause was a diminished sugar tolerance, the liver probably being at fault.

Our work comprised the study of the blood and urine of 235 infants. The preliminary tests were made by the reagents of Benedict and Nylander, and if the reducing substance was present in sufficient quantity, tests were carried out to determine its nature. There were forty normal infants whose blood sugar ranged from 0.068 to 0.11 per cent. The remaining 195 cases represented nutritional disorders ranging from the milder disturbances to those of severe intoxication. For convenience the cases were divided into mild, moderate and severe. There was an association between the increased blood sugar and the presence of sugar in the urine. As a rule, the cases with melituria showed hyperglycemia. In most instances the percentage of sugar in the urine ranged from 0.05 to 0.1 per cent. In such cases a determination of the nature of the sugar with any degree of accuracy was impossible. In twenty-seven cases the urine at some time contained 1 per cent. or more of sugar and further tests were made to determine its nature. These examinations showed that the sugar was usually galactose or dextrose. Lactose occurred, but not alone, it being always associated with galactose.

The important facts brought out are, therefore: 1. Melituria is usually accompanied by an increase in blood sugar. 2. The sugar in the urine is a monosaccharid. This indicates that a gross lesion of the intestine is not a direct cause of the melituria, but rather that the direct cause is a lowered tolerance to sugar. Our test to determine this tolerance shows definitely that there is a lowered tolerance to sugar in the nutritional disorders.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Nov. 4, 1914

The President, DR. JAMES C. WILSON, in the Chair

Pain and Tenderness in Diseases of Spinal Cord, and Their Surgical Treatment

DR. CHARLES A. ELSBERG, New York: Little attention has been given to the neural origin of abdominal pain. Operations have been performed for supposed gastric disease when the real trouble was gastric crises in the course of tabes. Two patients have been sent into my service with the diagnosis of acute appendicitis. In both instances the patients had Pott's disease with irritation of spinal nerve roots, and areas of skin and muscle tenderness in the right iliac region. I have records of three patients in whom various operations had been performed who were finally found to have a spinal tumor or a neuritis of the nerves of the cauda equina. Another patient operated on for supposed gangrene of the toes, with severe pain shooting down the leg, was finally relieved by an operation for spina bifida occulta. To understand the distribution of painful symptoms in the extremities it is of value to remember the anatomy of the spinal nerve roots. A tumor may press on some of the nerve bundles without compressing the entire spinal root. I removed an extramedullary tumor of the spinal cord between the seventh and eighth cervical segments in a case in which the first and for a long time only symptom was a painful pin and needle sensation in the index finger of the right hand. The tumor was found to have pressed on only the lower nerve root bundles of the seventh cervical posterior root. From several cases of this kind I feel justified in stating that of the nerve bundles that make up the seventh cervical posterior root, the lower supply the index finger and the upper the thumb. In my last hundred laminectomies for spinal disease I have performed six operations on patients who had been treated for long periods for abdominal symptoms. In every case of indefinite abdominal pain and tenderness it is advisable to make certain that we are not dealing with a cutaneous hypersensitiveness which so often simulates real abdominal tenderness.

DISCUSSION

DR. CHARLES W. BURR: In a patient seen some years ago the only symptom present was diffuse pain in the right arm. Later there was slight wasting in the muscles around the thumb. The pain was later replaced by painful anesthesia accompanied by marked wasting and gradually increasing palsy in the whole arm. After some time death ensued and at post-mortem there was found in the cervical region a long flat growth that had entered the nerve roots, first the posterior, causing only pain and then the anterior, causing pain and wasting. Had we but known the cause of the trouble, operation would have saved the patient a great amount of pain and probably her life.

DR. CHARLES H. FRAZIER: It is too commonly supposed that pain is a constant and conspicuous symptom of spinal tumor, referred to the peripheral distribution of the segment involved. A number of cases of spinal tumors have been observed in which throughout the course of the lesion there was absolutely no pain. The widely varying results of rhizotomy would seem to throw some doubt on the present conception of the pathways of afferent impulses, and suggest the possibility of the ventral roots having some part in the carrying of afferent impulses. Such a hypothesis has been already advanced by Kidd. Whenever possible a therapeutic test should be applied before operation in order to determine whether interruption of the sensory impulses does not relieve pain. Spiller's suggestion of resection of the anterolateral column of the cord is a most valuable one and appeals to me particularly in cases of uncontrollable pain of the lower extremities, and more especially, because the operation does not necessitate the removal of as many laminae of the spine as would be necessary to cut the required number of lumbar and sacral roots. In the limited number of root resections for pain in my clinic there have been no fatalities, but in a larger series, performed by a number of surgeons, the mortality rate has been estimated at 10 per cent. This is too high. The risks of the operation should be materially reduced. The low rate of mortality in my experience with laminectomy I attribute chiefly to intratracheal anesthesia and to the use of the stovain block.

DR. CHARLES A. ELSBERG: I am not very enthusiastic about cutting posterior spinal roots in the treatment of the crises of tabes. Professor Foerster states that the only way to get a fairly good result is by an enormous laminectomy, cutting from the fourth or fifth dorsal down to the twelfth, and that even then the result is not certain. I have seen temporary benefit from the injection of stovain into the spinal canal. Laminectomy is an operation in which the mortality should be very small and one which a surgeon after a little experience should be able to do easily. In ninety-eight successive cases we have had no mortality.

Pathology of Tabetic Ocular Palsies

DR. WILLIAM G. SPILLER: The ocular palsies of tabes have been regarded by some investigators as nuclear in origin, and the syphilitic ocular palsies as of nerve origin. This view may be disputed. I have studied by microscopic serial sections a typical case of tabes with complete internal and external ophthalmoplegia. The ocular nerves and their

nuclei were much degenerated; there was considerable round cell infiltration of the pia, but one of the abducent nerves which was less degenerated than the other showed also less round cell infiltration within the nerve. Round cell infiltration is indicative of the intensity of the syphilitic process. This case would throw doubt on the view that tabetic ocular palsies are nuclear.

DISCUSSION

Dr. Charles K. Mills: It is not at all uncommon for the diplopia often present in early tabes to disappear rather quickly. This would not occur were the palsies due to nuclear degeneration.

Dr. Daniel J. McCarthy: I would ask Dr. Spiller whether in his opinion tabes still exists, or whether all cases of tabes should be grouped together as spinal syphilis. My feeling is that we have distinct cerebral syphilis which reacts to treatment. Apart from this, paresis and tabes do not react, and when once developed are practically incurable.

Dr. W. G. Spiller: We recognize tabes and paresis, but we must regard them as truly syphilitic diseases. Tabes is caused by the degeneration of the posterior roots from the syphilitic poison. There are cases in which a positive diagnosis between spinal syphilis and tabes cannot be made. There are also cases in which the diagnosis between cerebral syphilis and paresis cannot be made, and these cases show how close the connection between cerebrospinal syphilis and the so-called parasyphilitic diseases may be.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

December, XXXVI, No. 1, pp. 1-76

1 *Effect of Temperature on Action of Thrombin and Antithrombin. W. H. Howell, Baltimore.
2 Orientation of Holothurian by Light. W. J. Crozier, Boston.
3 *Effect of Radiant Energy on Lens and Humors of Eye. W. E. Burge.
4 *Physiology of Stomach. A. B. Luckhardt and A. J. Carlson, Chicago.
5 *Secretory Innervation of Hypophysis. I. Rabens and J. Lifschitz, Chicago.
6 Studies of Autonomic Thresholds. W. L. Mendenhall, Boston.
7 Carotid Blood-Flow in Relation to Intra-Abdominal Pressure. R. Burton-Opitz, New York.

1. **Temperature Action on Thrombin and Antithrombin.**—At temperatures approximating the body-temperature, Howell states, the action of antithrombin is greatly augmented. It is probable that this action is of importance in insuring the fluidity of the circulating blood in animals like the mammals in which the content of antithrombin in the blood is small. The effect of high temperatures (60 to 100 C.) in weakening or destroying the action of thrombin is accelerated greatly by the presence of small amounts of neutral salts (NaCl).

3. **Effect of Radiant Energy on Eye.**—Burge summarizes his observation as follows:

Radiation from a quartz mercury vapor lamp which is sufficiently intense to coagulate egg albumin, egg globulin, vitellin, serum albumin and serum globulin in one hour does not coagulate the protein of the normal lens or of the vitreous or aqueous humors and hence does not affect the transparency of these structures after a continuous exposure of 100 hours. The region of the ultraviolet spectrum effective in coagulating the egg white lies between 265 and 302 microns. The region most effective lies around 265 microns.

The lens protein can be modified by solutions of calcium chlorid, magnesium chlorid sodium silicate or dextrose too weak of themselves to affect the transparency of the lens so that ultraviolet radiation can precipitate the modified lens protein and hence produce opacity of the lens. The effective region in case of modification of calcium chlorid is from 265 to 302 microns inclusive. The most effective region lies around 265 microns. Analyses of senile cataractous human lenses show that calcium, magnesium, and in lenses from India, silicates are greatly increased in this type of cataract. The assumption is made that the accumulation of these substances modifies the lens protein in such a way that the short waves of the spectrum can precipitate the protein, thus producing opacity or cataract. In the case of diabetic cataract the accumulation of sugar in the liquids of the body so modifies the lens protein that the short waves of the spectrum can produce opacity, hence the prevalence of cataract in this disease.

The above named substances, which so alter the lens protein that the short waves can precipitate it, at the same time decrease the fluorescence of the lens. This suggests that there may be some relation between this latter property and the great resistanc of the normal lens protein to ultraviolet radiation. In looking for the cause of cataract it would seem that at least two factors are to be considered, the one, a modification of the lens protein, and the other, radiation of short wave lengths by which this modified protein can be coagulated. Radiation from the infrared, or the visible region of the spectrum cannot coagulate either the modified or the unmodified lens protein provided the coagulation due to heat be excluded.

4. **Physiology of Stomach.**—According to Luckhardt and Carlson blood from starving animals and animals in pancreatic diabetes transfused into normal animals acts as a temporary stimulus to the gastric hunger mechanism. Excessive hemorrhage is followed by a temporary augmentation of the gastric hunger contractions. Prolonged starvation, pancreatic diabetes and possibly excessive hemorrhage result in the increase of some substance or substances in the blood that act as stimuli to the gastric hunger mechanism.

5. **Secretory Innervation of Hypophysis.**—The results obtained by Rabens and Lifschitz go to show that the presence of secretory nerves governing the activity of the hypophysis cannot be demonstrated by the glycosuria or hyperglycemia methods. The glycosuria resulting from the stimulation of the superior cervical ganglia is undoubtedly due to the effects of prolonged anesthesia and not to an excessive activity of the hypophysis caused by stimulation of a secretory nervous pathway to the gland. The authors suggest that the nerve fibers to the hypophysis described by Dandy may be vasomotor nerve fibers. The fact that no vasomotor nerves have been conclusively demonstrated in the cranial cavity does not prove that such nerves are absent from a complex gland like the hypophysis. And the fact that the anterior lobe has a vastly richer nerve supply than the posterior lobe does not in the least prove that these nerves are of a secretory nature. Stimulation of the cervical sympathetic nerves while the animal is conscious and under physiologic conditions does not produce hyperglycemia, glycosuria or diuresis. In all cases in which the animal is subjected to a crucial operation and prolonged ether anesthesia, glycosuria appears whether or not the superior cervical ganglia are stimulated.

A similar glycosuria occurred when the animal was subjected to mere prolonged anesthesia without even exposing the nerves or ganglia. Subjection to prolonged anesthesia after exclusion of all possible downward impulses to the abdominal viscera through vagus reflexes, with or without stimulation of the ganglia, led to a similar glycosuria. The glycosuria of prolonged ether anesthesia runs a uniform course, the amount of sugar gradually rising to a maximum and then gradually declining. This course is not influenced by the stimulation of the cervical sympathetic nerves, or the superior cervical ganglia.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

November, II, No. 5, pp. 295-355

8 *Leprosy. Its Treatment in Philippine Islands by Hypodermic Use of Chaulmoogra Oil Mixture. V. G. Heiser, Manila.
9 *Bacteriemic Nature and Laboratory Diagnosis of Leprosy. D. Rivas and A. J. Smith, Philadelphia.
10 Mosquitoes and Sewage Disposal. F. Knab and A. Busck, Washington, D. C.

8. **Chaulmoogra Oil Mixture for Treatment of Leprosy.**—The mixture used in the cases cited by Heiser was prepared as follows: Chaulmoogra oil and camphorated oil, 60 c.c. each; resorcin 4 gm. Mix and dissolve with the aid of heat on a water bath and then filter. The injections were usually made at weekly intervals in ascending doses. The initial dose is 1 c.c. and this is increased to the point of tolerance. The object sought is so to regulate the dose as to prevent reactions of too violent a character. Heiser says that experience shows that this treatment gives more consistently favorable results than any other and it holds out the hope that further improvement may be brought about. It produces apparent

cures in some cases, causes great improvement in many others, and arrests the progress of the disease in almost every instance. He has at present over 20 patients who have become microscopically negative since they began the treatment. The treatment is apparently equally efficacious in all forms of the disease; that is, the tubercular or hypertrophic, the anesthetic and the mixed.

9. **Bacteriemic Nature and Laboratory Diagnosis of Lepra.**—In support of the bacteriemic nature of lepra, that is that *B. lepra* exists in the circulating blood, Rivas and Smith have the following evidence: 1. *B. lepra* is found in the blood collected from healthy parts of the skin which are apparently normal and from which the micro-organisms are usually absent on section. 2. By the acetic acid method, *B. lepra* either singly, in pairs, in masses or in bundles is detected in the venous blood. 3. The presence of *B. lepra* in the form of lepra cells or phagocytosed by endothelial cells and more especially by lymphocytes in the venous blood. And finally, they suggest that the apparent or actual growth (at least temporarily) of *B. lepra* in cultures made from the venous blood may be an indication of the resemblance of leprosy to other bacteriemic diseases.

Journal of Biological Chemistry, Baltimore

November, XIX, No. 3, pp. 305-443

11 Immunization Against Anticoagulating Effect of Hirudin. M. Vera and L. Loeb, St. Louis.
12 Value of Proteins of Cereal Grains and Milk for Growth in Pig, and Influence of Plane of Protein Intake on Growth. E. V. McCollum, Madison, Wis.
13 Effect of Alkali on Permeability. W. J. V. Osterhout, Boston.
14 *Gastro-Intestinal Studies III (Studies on Water-Drinking XXI). O. Bergeim, M. E. Rehfuss and P. B. Hawk, Philadelphia.
15 Influence on Growth of Rations Restricted to Corn or Wheat Grain. E. B. Hart and E. V. McCollum, Madison, Wis.
16 Action of Rennin on Casein. A. W. Bosworth, Geneva, N. Y.
17 Acidosis in Omnivora and Herbivora and Its Relation to Protein Storage. H. Steenbock, V. E. Nelson and E. B. Hart, Madison, Wis.
18 Effective Principle in Thyroid Accelerating Involution in Frog Larva. M. Morse, Madison, Wis.
19 Is Antagonistic Action of Salts Due to Oppositely Charged Ions? J. Loeb, New York.

14. **Gastric Stimulation by Water.**—The authors claim that water (ordinary or distilled), either cold (10.5 C.) or warm (50 C.) as small a volume as 50 c.c. is a very strong gastric stimulant and in certain instances yields an acidity of over 100 c.c. (N/10 NaOH to neutralize 100 c.c. of juice), in less than twenty minutes. In the average normal individual water produces fully as great a stimulation (as measured by acidity and enzyme values) as does an Ewald test meal, and the acidity values follow a similar type of curve. Identical volumes of water introduced into the stomach of the same man during the same afternoon yielded similar acidity values. Under all conditions the increased acidity following water stimulation is accompanied by increased peptic activity, although the two types of values do not necessarily run parallel.

It was impossible to demonstrate any latent period for the human gastric glands. Therefore a prolonged and spread contact with the stomach mucosa is not a necessary preliminary to stimulation, as Pawlow and others have claimed. The introduction of 100 c.c. of distilled water into a stomach made empty by lavage was followed by the removal of samples at one-minute intervals which showed total acidity values of 19.5, 26.0, 49.5, 63.5 and 79.5. In one experiment definite evidence was obtained that 500 c.c. of water left the stomach in ten to twenty minutes after its introduction. In a single instance a very pronounced continued digestive secretion was observed. At least 225 c.c. of gastric juice of relatively high acidity were secreted after an initial stimulus afforded by 50 c.c. of distilled water (50 C.). Since water stimulates the gastric glands to activity when no food is present in the stomach as well as when there is a digestive task to complete, it seems to the authors a waste of glandular energy to drink water between meals. It would seem that water could best further the digestive plan when taken with meals.

Journal of Experimental Medicine, Lancaster, Pa.

December, XX, No. 6, pp. 545-641

20 *Effect of Gentian Violet on Protozoa and on Tissues Growing in Vitro, with Especial Reference to Nucleus. D. G. Russell, New Haven, Conn.
21 *Effect of Various Tissue Extracts on Growth of Adult Mammalian Cells in Vitro. A. J. Walton, London.
22 *Experimental Typhoid Infection of Gall-Bladder in Rabbit. H. J. Nichols, Washington, D. C.
23 *Proteotoxins (Anaphylatoxins) and Virulence. H. Zinsser and J. G. Dwyer, New York.
24 *Method of Counting Actual Number of Purkinje Cells Present in a Given Area of Cerebellum and Its Application in Ten Clinical Cases. F. W. Hitchings, Cleveland.
25 Agglutination Phenomena in Lobar Pneumonia. H. T. Chickering, New York.
26 Successful Cultivation of Skin Epithelium of Adult Frog, Rana Pipiens. E. Uhlenhuth, New York.

20. **Effect of Gentian Violet on Protozoa.**—The fact that embryonic and adult tissue of the frog will grow in vitro in the presence of gentian violet of a far stronger dilution than that necessary to kill many bacteria, as determined by Russell, lends encouragement to efforts now being made by him to apply the observations on the bactericidal effect of gentian violet and allied stains to the treatment of disease. Moreover, the ability of growing cells to rid themselves of this dye would indicate that it may be possible to apply the dye to infected tissue and count on the cells to eliminate the material after its work had been done. In Russell's experiments, for example, successful tissue growths were obtained when gentian violet 1 to 20,000 were used, yet *Bacillus subtilis* will not grow in 1 to 100,000 dilution and grows very badly in 1 to 1,000,000 dilution.

21. **Growth of Adult Mammalian Cells in Vitro.**—Walton found that the majority of tissue extracts stimulate the growth of connective tissue, but liver extract inhibits it. The extracts are to a certain extent specific in their action on the growth of parenchymatous cells. Some cells are stimulated by one extract and inhibited by another, and those extracts which inhibit one type of parenchymatous cell may stimulate another type. Homogenous and autogenous extracts are equally efficacious in their action on the growth of cells.

22. **Experimental Typhoid Infection of Gall-Bladder in Rabbit.**—The following subjects are considered by Nichols: (1) pathogenicity of a living sensitized vaccine, (2) pathogenicity of first transplant from a living sensitized vaccine, (3) the regular production of lesions, (4) the gall-bladder lesion as a test of immunity, (5) the curative effects of vaccines, and (6) the practical bearing of experimental work. Altogether, ninety-seven animals were used and forty gall-bladder lesions were observed.

Nichols states that Besredka's living sensitized vaccine, given intravenously, does not produce a typhoid lesion of the gall-bladder in the rabbit. The first transplant of this vaccine is capable of producing this lesion. Hence this vaccine is not entirely safe to handle. Regular infections of the gall-bladder have not been produced by carrying a known pathogenic strain on rabbit blood agar, by successive passage through animals, or by the use of freshly isolated strains. No evidence could be demonstrated in the rabbit of the immunity produced in man by vaccination with a whole killed vaccine. Vaccine treatment did not cure the gall-bladder lesions.

Nichols concludes that with the present methods of producing infections in the chimpanzee and the rabbit, neither of these animals is suitable for deciding the problems of the immunization of man by vaccines. These problems must be settled by actual experience with large numbers of men kept under close observation.

23. **Proteotoxins and Virulence.**—The experiments reported on by Zinsser and Dwyer show that proteotoxin (anaphylatoxin) produced with typhoid bacilli and active guinea-pig serum, by the general method of Friedberger, possesses aggressin-like action in that, when injected together with sublethal doses of bacteria, it renders them lethal. This action is not specific, since even when typhoid bacilli are used in its production, the proteotoxin possesses this property not only for typhoid bacilli, but for staphylococci and prodigiosus bacilli, the only other organisms with which the

authors have worked. This action is manifest in the experiment only when quantities of proteotoxin are used which can produce a certain degree of systemic poisoning. It is not due to anti-opsonic action since the phagocytosis of staphylococci in the presence of active serum takes place readily in spite of the presence of relatively considerable amounts of the poison.

The authors suggest that the aggressin-like action of the proteotoxin is probably due to the leukopenia that it causes. It is not likely that this leukopenia is dependent on a negative chemotactic action, in the ordinary sense of this term, but it is probably due to the general intoxication of the animal, resulting among other things in the poisoning of those tissue elements which ordinarily react to infection with the mobilization of leukocytes in the circulation.

24. **Method of Counting Purkinje Cells.**—In the application to clinical cases of the method of counting Purkinje cells Hitchings found that increasing nerve cell exhaustion is accompanied by increasing nerve cell disappearance although it is recognized that theoretically complete nerve cell exhaustion could be present without nerve cell disappearance on account of the individual dying before phagocytic action could take place. Hitchings is convinced that this disappearance of nerve cells corroborates the theories and observations made on phagocytosis of nerve cells, inasmuch as it shows that nerve cells disappear from the brain. There were 16.6 per cent. fewer cells in the case with the maximum cell exhaustion (57 per cent.) than in the case of the normal man (2 per cent.).

Journal-Lancet, Minneapolis

December 1, XXXIV, No. 23, pp. 615-642

27 *Transplantation of Bone (Inlay Method) in Ununited Fractures. M. S. Henderson, Rochester.
28 Eye in General Practice. E. D. Putnam, Sioux Falls, S. Dak.
29 Public Health. C. J. McGurren, Devils Lake, N. Dak.
30 *Herter's Infantilism. O. W. Rowe, Duluth.
31 Typhoid Carriers as Causative Factor in Institution Epidemics: Methods for Finding and Controlling Same. E. H. Trowbridge, Faribault.

27. **Transplantation of Bone in Ununited Fractures.**—Henderson records thirty-two cases of delayed union in the long bones in which the patients were treated by transplantation of bone. In the total number the results have been very satisfactory. Five failures occurred, two in ununited fractures of the neck of the femur, two in the humerus and one in the forearm. The remaining twenty-seven cases have been successful in every instance, and all but a few patients are so far recovered as to insure a good functional result. Speaking of methods of transplantation, Henderson says that a piece of cortical bone may be removed from the tibia and placed as an intramedullary transplant in the humerus, but clinical observation goes to show that this is really a foreign body, is not in a field normal to it, and gradually undergoes absorption, but in its absorption it is conducive to osteogenesis. Wherever possible, the inlay method is preferred to the intramedullary by Henderson, for one may then place periosteum to periosteum, cortex to cortex, and medullary lining to medullary lining. He does not believe that the question of bony contact is so important in fractures as in using pieces of bone to bridge the long gaps, for there is no difficulty in obtaining an abundance of contact. Generally speaking, as much and as close approximation as possible is desirable.

Asepsis is a very desirable factor, though not absolutely essential. Instances of successful transplantation for compound ununited fractures have been noted in spite of infection. Transplants obtained from the same individual are universally acknowledged to be superior to those obtained from other individuals or from other species. The age of the patient is important. Grafts grow best in the young and in middle-aged people, although, as in other conditions, age alone is no guide for some people are younger at 50 than others at 40. Absolute fixation is necessary to prevent the graft from moving about. This fixation is, of course, obtained according to the type of fracture being treated. The periosteum Henderson regards as a limiting membrane, vascular in character, which plays an important part in the nourishment of the bone, and is of sufficient importance to demand preservation when possible.

30. Abstracted in THE JOURNAL, Oct. 31, 1914, p. 1601.

Michigan State Medical Society Journal, Grand Rapids

December, XIII, No. 12, pp. 681-734

32 *Surgical Treatment of Facial Paralysis. E. H. Beckman, Rochester, Minn.
33 Recent Developments in Pathology and Etiology of Pneumonia. T. D. Gordon, Grand Rapids.
34 Symptomatology, Diagnosis and Prognosis of Lobar Pneumonia. C. H. Johnston, Grand Rapids.
35 Treatment of Pneumonia. C. G. Jennings, Detroit.
36 Pleuritic Effusions and Empyema Subsequent to or Co-Incident with Pneumonic Attacks. V. C. Vaughan, Jr., Detroit.
37 Pneumonia Mortality and Prevention. J. L. Burkhart, Lansing.
38 Mendelism and Its Meaning. L. H. Harvey, Kalamazoo.

32. **Surgical Treatment of Facial Paralysis.**—Surrounding the nerve anastomosis with fresh section of vein has been used in the Mayo clinic in three cases. Beckman states that the section of vein protects the anastomosis with a thin cylinder which is already lined with endothelium and would seem to protect the sutured ends from the encroachment of connective tissue. In the three cases in which it was used, the restoration of function has been more perfect than in one case in which the anastomosis was surrounded by fascia and muscle. An inch or inch and a half section of the facial, external or anterior jugular vein is slipped over the spinal accessory nerve before the anastomosis is made and afterward moved along until it completely covers the anastomosis. In all of the operations, four in number, they have used the main trunk of the spinal accessory nerve and made an end-to-end anastomosis.

New York Medical Journal

December 5, C, No. 23, pp. 1097-1144

39 *Tonsillotomy Versus Tonsillectomy. T. R. French, New York.
40 Unusually Large Ureteral Calculi. L. Buerger, New York.
41 *Backache. C. Ogilvy, New York.
42 Fracture of Clavicle. W. E. Hartshorn, New Haven, Conn.
43 Intravenous Treatment of Arthritic Processes. A. Comstock, New York.
44 Local Anesthesia in Hernia Operations. C. P. Knight, Stapleton.
45 Urinary Findings in Various Pathologic Conditions of Alimentary Canal. S. R. Klein, New York.
46 Intracranial Diseases from Ear. A. Bardes, New York.
47 Technic of Vaccination. B. Diefendorf, Canajoharie.

39. **Tonsillotomy Versus Tonsillectomy.**—Because of the possible existence of a tonsillar function, also because of the subsequent pharyngeal deformity and the consequent alteration of the quality of the voice occasioned by tonsillectomy French considers it desirable to leave the capsules in the tonsillar fossae whenever possible. While all extensively diseased tonsils should be enucleated, he believes that it is probably safe to say that at least 80 per cent. of enlarged tonsils do not contain foci of infection and, therefore, do not need to be completely removed, and, indeed, unless obstructive to voice or respiration, do not need to be removed at all. In cases in which there is a doubt of the character of the interior of the tonsils, but which are brought to operation for the removal of irritating or obstructive adenoid growths, a fairly accurate knowledge of the condition of the crypts or of the presence of pus sacs or pockets can be obtained by removing, at the beginning of the operation, a substantial portion of one tonsil and submitting it at once, in a brilliantly illuminated field, to examination under a finely ground loupe with a magnification of from 5 to 10 diameters. If the tonsil from which the section was taken is found to be apparently free from disease, and the clinical history is without significance, the remainder of the gland should be removed by complete tonsillotomy—that is, down to the capsule. The opposite tonsil, if not obstructive, may then with propriety be left alone, but if obstructive, it also should be removed by complete tonsillotomy. If the exploratory section, however, shows that one tonsil is diseased, then both tonsils should be enucleated. The base left after a considerable part has been removed for examination, can be as readily enucleated as if a part had not been removed.

41. **Backache.**—The cause of backache Ogilvy states is very often found to be a postural deformity with a resulting muscle strain. The cause of the postural deformity is very frequently weak feet. A sacroiliac joint strain, with or without muscle strain, is responsible for a number of cases. The diagnosis of muscular rheumatism should seldom be made, as by so doing one is simply evading the question. When myalgia is present, an infectious origin should be sought for.

Pennsylvania Medical Journal, Athens

November, XVIII, No. 2, pp. 91-170

48 *Banti's Disease: Report on Operative Cases. J. Sailer, Philadelphia.
49 Recent Advances in Diagnosis in Pediatrics. J. F. Sinclair, Philadelphia.
50 Duration of Infection in Scarlet Fever. M. Ostheimer, Philadelphia.
51 Hip Disease. J. Ridlon, Chicago.
52 *Dependent Intercostal Drainage in Acute Empyema. T. T. Thomas, Philadelphia.
53 Local Application of Radium in Surgery. I. Levin, New York.
54 Use of Natural and Artificially Prepared Radio-Active Solutions in Internal Medicine. G. D. Kahlo, White Sulphur Springs, W. Va.
55 Intravenous Injection of Radium Element. J. B. Bissell, New York.
56 Radium in Cutaneous Lesions. W. A. Pusey, Chicago.
57 Comparison of Uses of Roentgen Ray and of Radium with Lantern Demonstrations. W. S. Newcomet, Philadelphia.
58 Development of Tuberculosis Campaign in Pennsylvania. A. P. Francine, Philadelphia.

48. **Banti's Disease.**—Three cases of Banti's disease were studied by Sailer. In all three splenectomy was performed. Two of the patients recovered and one died but in the last case death was due less to the operation than to the massive hemorrhages that preceded it, and in the hope of stopping which the operation was performed. One patient never had massive hemorrhages but occasionally had severe attacks of pain in the intestines after which occult blood could be found, and on one occasion had an attack of pain in the left flank subsequent to which blood was found in the urine, so that Sailer feels reasonably safe in concluding that a small renal hemorrhage occurred. The interesting features of the first case are the comparatively brief course, two and one-half years; the severe paroxysms of pain which can be ascribed to hemorrhages not only from the gastro-intestinal tract but also from the kidneys; the large size attained by the spleen in the short time, the absence of any sign, macroscopically, of change in the liver at the time of the operation; a prolonged and complicated postoperative period and ultimate apparent recovery. The three cases are reported in detail.

52. **Dependent Intercostal Drainage in Acute Empyema.**—Thomas cites nine cases. He says that the object of treatment should be to provide a drainage opening which gives free drainage and admits as little air as possible. This is accomplished best by the intercostal opening at the bottom of the cavity large enough to admit the ordinary rubber tube. The constantly escaping pus through and around the tube will prevent the entrance of air except on forced respiration as in crying and coughing. This is as easily and safely made as the higher opening, and can be done in most homes. The lower opening will more quickly relieve the patient of the septic symptoms, lower the mortality, lead to a quicker convalescence and earlier closure of the cavity and sinus, than the higher opening.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

November 21, II, No. 2812, pp. 865-908

1 *Treatment of Wounds in War. W. W. Cheyne.
2 Principles of Wound Treatment as Established by Lister and Subsequent Modifications in Treatment. F. M. Caird.
3 *Borderland of Disease. G. Rankin.

1. Also published in the *Lancet*, Nov. 21, 1914. See Abstract No. 12.

3. **Borderland of Disease.**—Rankin's closing paragraphs are a good summary of what he touches on his paper. He says:

> The subject of borderland illnesses is extensive, but these desultory notes and illustrative cases may stimulate some interest in questions affecting the earliest departures from the high level of perfect health. Perhaps there is almost no such thing as "perfect" health, but it is possible by careful inquiry and patient investigation to make sure that we do not found a firm opinion on a casual observance of physical signs or a mere negation of subjective symptoms, but that we look a little more sharply after collateral evidence— that, in short, we forage inquisitively in the borderland, in which more often than we believe, we will find evidences of minor imperfections that so often escape discovery. It would be a provident and wise plan if every man went to his physician for a thorough overhaul once in six months, not because he was driven to him on account of feeling ill, but because he was led to him by the desire to keep well. As custom now dictates it, the physician is only sought out when there is an evil to remedy, but the day is not far distant when he will be retained in order that the evil may be, as far as possible, averted.
>
> It is true that we are more frequently consulted about trivial ailments than on account of acute and serious disorders; nay more, our time is often vexatiously encroached on by having to listen to a long tale of imaginary woes and a formidable recital of aches and pains for which we can find no physical explanation, but, if my contention is right, all such patients are on the borderland of disease. Their discomforts, whether physical, mental or emotional, have a foundation in fact somewhere and clearly point to a fault that disturbs the harmony of perfect physiologic activity. The engine is not tuned up to the best work it is capable of, and unless adjusted in time, some part must inevitably become permanently faulty, and constitute the blemish which spells premature consignment to the human scrap-heap. "Prevention is better than cure" is truer to-day than ever before, and we will do much to justify the proverb and to hasten its full realization if we direct our attention more and more to the borderland country and the evidences which are constantly to be found there of the earliest movements on the part of the enemy of mankind.

Dublin Journal of Medical Science

November, III, No. 515, pp. 321-400

4 Radium. J. Joy.
5 Treatment of Exophthalmic Goiter by Roentgen-Rays. T. G. Moorhead.
6 Summary of Eleven Years' Experience of Radium on Superficial Cancer with Exhibition of Cases Nine Years Cured. C. M. O'Brien.

Lancet, London

November 14, II, No. 4759, pp. 1133-1184

7 *Clinical Study of Glycosuria. N. Tirard.
8 Some of the Problems of Gunshot Fractures. E. W. H. Groves.
9 Incidence of Plague in Europe. C. Strickland.
10 Oculomotor Paralysis of Otitic Origin. F. H. Westmacott.
11 Occurrence of Acute Emphysematous Gangrene (Malignant Edema) in Wounds Received in War. R. H. J. Swan, I. Jones and J. W. McNee.

November 21, No. 4760, pp. 1185-1232

12 *Treatment of Wounds in War. W. W. Cheyne.
13 Splenomegalic (Hemolytic) Jaundice Associated with Bile Pigment in Urine. T. R. C. Whipham.
14 Pityriasis Rosea of Gibert. E. G. Little.
15 Traumatic Rupture of Liver; Laparotomy; Recovery. L. H. Taylor.
16 Morphologic Types of Bacilli as an Element in Prognosis in Pulmonary Tuberculosis. H. R. Wilson.
17 Wounds Observed During Three Weeks' Fighting in Flanders. G. H. Makins.

7. **Study of Glycosuria.**—On the principle of early relief of pent-up pus, of early removal of gangrenous tissues, and the adoption of measures to prevent septic absorption, Tirard suggests going a step further and adding yet another theory for glycosuria which may knit together in a new light the results of clinical observation, of physiologic experiments, and of pathologic investigations. While greater influence on glycosuria is exerted by diet rather than by drugs, the remedies which have proved most efficacious, the salicylates, are those ordinarily credited with the power of controlling toxic processes resulting from the growth of micro-organisms. From the experimental side glycosuria has been induced in dogs by injecting into the pancreas irritants which have produced pancreatitis or extensive sloughs. By the removal of sloughing tissues, as in carbuncles, in perforating ulcers, and in gangrene, glycosuria is quickly reduced.

Tirard believes that these observations, collectively, warrant the suggestion that some cases of glycosuria depend on a perversion of pancreatic secretion due to toxic absorption. If this view is correct it may lead to the employment of a

vaccine to counteract the toxic influence. He cites a number of cases in which the operation caused the disappearance of sugar. A case in point is the following: The patient was a man, aged 53, suffering from gangrenous phimosis, and the surgeon was averse to operation owing to the presence of sugar in the urine. The history showed that during two years there had been increasing frequency of micturition and some loss of weight. Four days before the patient saw Tirard he had been markedly drowsy and had complained of parched mouth and dry tongue. Although the specific gravity when first examined was 1040, it speedily fell after the removal of large gangrenous sloughs, and within a month it was extremely difficult to obtain any reaction for sugar. The sugar ultimately disappeared until the patient had an attack of tonsillitis, when during the high temperature sugar was again found to be present for a short time.

Tirard urges that the adoption of this view should encourage greater readiness to remove gangrenous tissues at an early stage, and that operations of greater magnitude might well be reserved until the quick reduction of sugar has permitted greater liberality of diet.

12. **Treatment of Wounds in War.**—Cheyne points out that the chances of rendering a wound aseptic are comparatively small after twenty-four hours, and practically *nil* after forty-eight hours; indeed, after that time he would not make any attempt to disinfect the wound. If, therefore, the case does not come under treatment within twenty-four hours no one can blame the surgeon or any system of treatment for the septicity of the wound. The reasons given by Cheyne as to why practically all wounds in the present war become septic are: (1) because there is often long and unavoidable delay in collecting the wounded and commencing treatment; (2) because the wounds may be very large, complicated and almost impossible to disinfect thoroughly; and (3) because in a good many cases no attempt is made to disinfect these wounds, or if it is made it is utterly inefficient.

As to the period of time during which it is advisable to attempt disinfection of the wound, Cheyne's opinion is that it is only during the first twenty-four hours that it is at all likely that bacteria can be eradicated, and indeed after twelve hours the result is not at all certain. During the first twelve hours, however, the great majority of wounds, unless they are large and irregular or complicated with extensive comminution of bone, can, he says, be rendered aseptic quite readily and immediately, and if proper precautions are taken afterward will remain aseptic, and thus the troubles resulting from the primary soiling of the wound will be avoided. The first point is to kill not only actively growing bacteria, but also the spores of bacilli. Cheyne prefers phenol to iodin as an antiseptic because it dissolves in the natural oil of the skin and so can extend its antiseptic action down the hair follicles and the orifices of the sebaceous glands. If more than twenty-four or possibly forty-eight hours have elapsed since the infliction of the wound any attempt at general disinfection of the wound would be an injudicious and harmful procedure, and still more so if suppuration has begun. The skin should be cleansed and disinfected and if there is any earth or gross dirt still visible about the wound the tissues involved should be cut or clipped away and the raw surface daubed with phenol. Apart from this, which is only occasionally necessary, Cheyne emphasizes that the important point is to provide the freest possible escape for discharge, and in order to obtain this it is often necessary to enlarge the original openings and to make counter openings. Further, any foreign bodies which are readily accessible should be removed, but at this stage it is not advisable to open up fresh wounds in the deeper tissues in order to hunt for bullets or pieces of shell, for this merely exposes fresh tissues to infection unnecessarily before the body generally has developed its full resisting power. The actual drainage of the wounds must be carried out by the use of as large drainage tubes as can be introduced conveniently with holes of suitable size in their sides; when there are counter openings, pass the tube through from one opening to the other.

As regards dressings in these cases, Cheyne says, aseptic dressings are not only useless but injurious. The septic discharge soaks into them, and decomposes there, and the dressing simply becomes a septic poultice which poisons the wound. Antiseptic dressings are better. Cheyne uses cyanid gauze next the wound with salicylic wool outside. His experience is that it is best to lay only a few layers of antiseptic gauze over the wound to prevent it being soiled by the clothing or blankets, and to apply boracic fomentations and change them frequently. Wherever it is possible, however, in the case of large wounds and those involving bones or joints, constant irrigation with normal saline solution is by far the best method of treatment. The irrigation is at first continued day and night, but as the discharge gets less and the wound begins to heal, boracic fomentations may be substituted during the night, but the irrigation should be continued during the day till healing is nearly complete. Cases in which gangrenous processes set in, a water bath, frequently changed with a little iodin or permanganate of potash in the water is the best treatment.

As to the removal of the missile which has done the damage, if it is present in the main wound, or is doing harm by pressure or otherwise, it should be removed at once, but not uncommonly fragments of shell or bullets pass into the tissues for a considerable distance from the main wound, and if left alone may become encapsuled and not do any harm and the wound of entrance will heal quite well. Such fragments can be removed by a separate incision later if necessary.

Bulletin de l'Académie de Médecine, Paris

November 3, LXXII, No. 34, pp. 231-242

18 Antityphoid Vaccine Sterilized with Iodin. (Autorisation de préparer et de débiter un vaccin antityphoidique sterilisé par l'iode.) Netter.
19 Large Doses of Chloral in Treatment of Tetanus. Demmler.

November 10, No. 35, pp. 243-258

20 Treatment for Compound Fracture of the Femur. (Du traitement des fractures de cuisse par projectiles de guerre infectées, appareil réalisant la contention de la fracture et le pansement facile de la plaie.) E. Quénu.
21 Surgical Treatment of Wounds of the Nerves. (Note sur l'intervention chirurgicale dans les blessures des nerfs des membres par projectiles de guerre.) H. Walther.

Berliner klinische Wochenschrift

November 2, LI, No. 44, pp. 1757-1780

22 Eczema and Neurodermitis in Children. A. Lehnert.
23 Megalocytes in Anemia. (Zur Frage der diagnostischen Bedeutung hämoglobinreicher Megalocyten.) L. Dünner.
24 Gunshot Wounds of Nerves in the Arms. (Der Kriegssanitätsdienst in Berlin. VI.) E. Froehlich.
25 Technic for Roentgenoscopy of the Viscera. (Einfache Aufnahmetechnik zur Röntgenuntersuchung der Baucheingeweide.) A. Henszelmann.
26 *Blindness from Atoxyl. (Zur Atoxylamaurose.) F. Makrocki.
27 Medical Ethics and Regulation of Medical Practice during Wartime. (Aerztliche Rechtsfragen zur Kriegszeit.) H. Lieske.

26. **Blindness Under Atoxyl.**—The atoxyl was given very cautiously but the patient, a woman of 63, became totally blind after taking 0.725 gm. of atoxyl in all in nine doses in less than two weeks.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 31, XLIV, No. 44, pp. 1377-1392

28 *Vaccine Therapy in Gonorrhea. (Kritisches zur Vakzinetherapie der Gonorrhoe, zugleich experimenteller Beitrag zur Begründung der "ableitenden" Therapie.) B. Bloch.

28. **Vaccine Therapy of Gonorrhea.**—Bloch has not had as good results with intramuscular vaccine therapy as some have reported, but his experience in forty cases seems to show that the intramuscular and subcutaneous methods have no untoward by-effects as a rule. Only a few instances of complications have been published in which the preceding vaccine therapy might be incriminated. In these cases epididymitis or salpingitis, keratitis, a rash, transient cerebral symptoms or parenchymatous nephritis, developed in one case each. Bloch administered the vaccine in a few cases by intravenous injection and the results surpassed his highest anticipations. The reaction was very severe, both local and general, but the rapid subsidence of the gonorrheal arthritis and epididymitis, mucosa processes and pros-

tatitis testified to the therapeutic influence of the procedure. The idea occurred to him that the intense reaction—rather than any specific influence—was responsible for the benefit. To test this he treated three other patients with unusually severe gonorrheal arthritis by intramuscular injections of antityphoid vaccine. The febrile reaction was followed by prompt subsidence of the joint symptoms and finally a complete cure. Bloch does not venture to generalize from these three cases, but he thinks they sustain Gerhardt's statements in regard to the possible favorable influence of intercurrent infectious diseases on the course of chronic affections. (Summarized in THE JOURNAL, 1912, lix, p. 2194.) Such experiences cast doubt on the specific nature of certain reactions; antibodies against both typhoid and gonococcus infection, for example, are liable to be generated together. It sustains the old theory of revulsion and counter-irritation and suggests an explanation for the benefit reported from tuberculin in various supposedly non-tuberculous diseases.

Deutsche medizinische Wochenschrift, Berlin

October 29, XL, No. 44, pp. 1905-1928

29 *Treatment of Tetanus. V. Czerny. Concluded in No. 45.
30 *Subcutaneous Injections of Magnesium Sulphate in Tetanus among the Wounded. A. Falk.
31 Gunshot Wounds of the Lungs. (Lungenschüsse.) A Schmidt.
32 To Hasten Healing of Wounds. (Sparsame und beschleunigte Wundbehandlung im Kriege.) G. Ledderhose.
33 Injury of the Ears at the Front. (Die ohrenärztlichen Aufgaben im Kriege.) E. P. Friedrich. (Ohrenerkrankungen im Felde.) W. Kümmel.
34 Technic for Taking Medical Photographs. (Zur Technik der medizinisch-photographischen Aufnahme.) A. E. Stein.

29. **Tetanus.**—Czerny states that half of all the wounds that come into his hands are the jagged tears made by shrapnel and that tetanus threatens to decimate these wounded. There were 29 cases at Heidelberg alone up to the end of September. The fine hospital trains which make such an imposing display at expositions are unable to care for even a tenth of the wounded in the present gigantic battles. The wounded have to be taken to the rear in freight trains that have brought horses and other supplies to the front. There is no time to clean them properly and Czerny urges that two or three empty cars be carried along so that these can be cleaned and the wounded then transferred to the cleaned ones on the trip. By such care during the transportation it may be possible to ward off tetanus. In September he had four cases of tetanus that had developed on the way although the journey lasted only two days, and now the distance to be covered sometimes requires an eight-day journey. He cites Larrey's observation during the Napoleon campaigns that sudden changes in temperature and bad conditions in regard to transportation increased the number of cases of tetanus, and Czerny adds that the recent cold and wet weather has probably contributed to the increasing prevalence of lockjaw.

In treatment he suggests that as the tetanus toxin is destroyed by heat, it might be possible to sterilize the wound with superheated air or diathermia. Iodoform and Peruvian balsam, he says, might likewise check the growth of the bacteria. He thinks that primary amputation should not be rejected so absolutely as is the rule now. Two of his tetanus patients recovered after amputation. A third died without the contemplated amputation and necropsy revealed that the limb had been shattered much more seriously than its aspect revealed. All wounds should be given preventive antitetanus serum treatment when tetanus is prevailing; he had a patient once who died of acute trismus the sixth day after he had scratched his nose on the thorn of a rose. The wounded should be protected against jars, drafts and nervous shocks. A preventive injection of antitetanus serum should be given the same day as the injury, especially if it is a shell wound. He reiterates that local muscular spasm in the vicinity of the wound is often the first sign of trouble.

30. **Subcutaneous Injection of Magnesium Sulphate.**—Falk anesthetized the spot first with subcutaneous injection of 2 or 3 c.c. of a 1 per cent. solution of novocain, and then injected the 30 per cent. solution of magnesium sulphate. With inadequate doses, the spasms were exaggerated. If they did not subside spontaneously, they were controlled with chloral or another injection of the sulphate. The dose had to be 5 or 6 gm. to show any effect in the mild and moderately severe cases. No injurious by-effects were observed with single doses of 9 gm. up to a daily dose of 24 gm. One patient had 20 gm. given for six days in succession with good effect. In the very severe cases it is well not to be too timid with the dosage. As much as 12 gm. was given at one time in some cases without apparent harm. Under the magnesium the spasms relaxed in about an hour so that the patient could be raised to a sitting position and fed. Mild doses of chloral and morphin were given with the magnesium at times, although it was constantly borne in mind that the action of other drugs superposed on the magnesium might further depress the respiration function. An average of three injections were made in the twenty-four hours, as the symptoms returned, when the patients complained that their chests felt tight or they could not swallow. This feeling of tightness in the chest was generally the precursor of severe convulsions, and hence it calls for vigorous dosage.

Deutsche Zeitschrift für Chirurgie, Leipzig

August, CXXXI, Nos. 1-2, pp. 1-188

35 Operative Treatment of Cleft Palate. (Die Gaumenspalte. Die verschiedenen bisher angewandten Operationsmethoden und deren Klassifikation.) R. Drachter.
36 Torsion of Hour-Glass Stomach. (Volvulus ventriculi bei Sanduhrmagen.) R. Richter.
37 Operative Treatment of Pulmonary Tuberculosis. (Pneumolysia interpleuralis.) F. Torek (N. Y.); (Anatomisch technische Studie zur Frage der Pneumolyse.) G. Mertens.
38 Intestinal Cystoid Pneumatosis. R. Faltin.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

August, XL, No. 2, pp. 187-330

39 Advanced and Full-Term Extra-Uterine Pregnancy. W. Beckmann.
40 *Extra-Uterine Pregnancy Ruptured in the Early Months. J. Olow. Continued from No. 1.
41 Aims and Technic of Thyroid Treatment. G. Schmauch.
42 Properties and Uses of Radio-Active Substances. A. Eder.
43 Incubator Treatment of Prematurely Born and Weak Infants. H. Betke.
44 Gynecology and Psychiatry. B. S. Schultze.

40. **Ruptured Extra-Uterine Pregnancy.**—Even in acute cases of ruptured extra-uterine pregnancy some authors advise expectant treatment, for they hold that if the patient does not die immediately she is apt to survive without an operation, which is therefore unnecessary. Even among those who admit the advisability of operating there is a dispute as to whether it should be immediate or deferred. Many American physicians advocate the latter plan. Others hold that each case should be treated individually, which is equivalent to expectant treatment with later secondary operation. When it comes to the advanced cases, there are still more operators who advise late operation or none at all. Olow advises immediate operation as a rule in all cases. He holds that intraperitoneal hemorrhage from any cause requires an immediate operation. It is impossible to decide which cases will recover if left alone. The advocates of deferred operation do not wish to operate in shock, but he believes that shock in extra-uterine pregnancy is as a rule due to the anemia, and will, therefore, increase rather than decrease. In the advanced cases the patient is always in danger of renewed hemorrhage if the operation is not performed, and this danger more than offsets the advantage of waiting for recovery from the anemia of the first hemorrhage. To show the advantages of routine operating over individualistic treatment in advanced cases, he compares his sixty-four cases with those of Scanzoni, who advocates individualistic treatment. Comparison of the figures shows that the results of operation are fully as good with reference to life, capacity for work and for conception, etc., and much better with reference to the time required for recovery.

Münchener medizinische Wochenschrift

November 3, LXI, No. 44, pp. 2161-2196

45 Congenital Status Thymo-Lymphaticus; Three Cases. H. Schridde.
46 Cosmetic Depilation. (Die Entfernung des Frauenbartes.) K. Unna.

47 Fatal Male-Fern Poisoning in a Clinically Latent Case of Addison's Disease. (Filixvergiftung.) F. Schotten.
48 Comparative Dosage of Roentgen and Gamma Rays. W. Gerlach.
49 Nervous and Mental Disturbances among Combatants. (Nervöse Erkrankungen bei Kriegsteilnehmern.) R. Wollenberg.
50 Antitetanus Serum. (Zur Heilserumbehandlung des Tetanus.) A. Heddäus.
51 Circular of Directions before Naval Battles. (Leitsätze für die erste Behandlung von Seekriegsverletzungen.) M. zur Verth.
52 Roentgen Examination at the Front. (Röntgenuntersuchungen im Kriege.) G. Loose.
53 Spectacles for the Gunners. (Schiessbrillen.) F. Schanz.
54 Surgical Experiences in the Field. (Chirurgische Beobachtungen und Erfahrungen im Felde.) H. Schlange.

Wiener klinische Wochenschrift, Vienna

November 12, XXVII, No. 46, pp. 1471-1500

55 *Experiences with Gunshot Wounds of the Skull. (Hirnschüsse.) O. Marburg and E. Ranzi.
56 *Gunshot Aneurysms; Thirteen Cases. H. v. Haberer.
57 War Wounds of the Eyes. (Kriegsverwundungen des Auges.) S. Bernheimer.

55. **Gunshot Wounds of the Skull.**—Marburg and Ranzi conclude from their experience with thirty-three cases that operative treatment is required for wounds from bullets striking at a tangent if there is evidence that the bone has been depressed and there are clinical symptoms of irritation or functional deficit. Also in cases of direct penetrating wounds when the projectile is close to the surface. Deep-seated projectiles can also be removed if severe symptoms develop, but the outlook is not very promising. On the other hand, prolapse of brain tissue indicates a more severe and diffuse brain process, causing edema or swelling of brain tissue, and the prospects are so bad that operative intervention is not advisable as the trouble is too generalized.

56. **Gunshot Aneurysms.**—Von Haberer gives an illustrated report of thirteen cases of gunshot aneurysm and emphasizes the importance of waiting for the virulence of the germs to become attenuated when the traumatic aneurysm has become infected. He condemns any attempt to operate as long as there is the slightest discharge from the wound, unless one's hand is forced by serious symptoms. In two of his cases there were no signs of infection but the pain was so intense that he operated without further delay, during the first three weeks. In the four other non-infected cases he waited until the fifth or sixth week. In the infected cases, the course was more favorable in those operated on without too long delay, and he thinks that the technic is of greater moment than the interval since the development of the aneurysm. He exposes the artery above and throws a loop of thread around it, but does not apply a constricting band to shut off the circulation from the limb. With the loop of thread he is prepared for all contingencies and can shut off the flow of blood at will, while the retention of the circulation otherwise is a great advantage.

In some cases a peculiar contraction of the knee was the first sign to call attention to the popliteal aneurysm; in others isolated radial paralysis was the first symptom of an axillary aneurysm. In still other cases sensory disturbances gave the first warning. The aneurysm may not develop for some time after the wound. In several instances the men were taken from the train already started on their way back to the front, apparently entirely cured of their wound from a bullet passing through a limb or the axilla. All his patients promptly recovered after the operation, only one, in advanced sepsis when first seen, required amputation. In one case the bullet entered the cheek and passed out through the neck on the other side causing an aneurysm involving the internal carotid and the jugular vein. There was a tendency to paralysis on the side of the entrance of the bullet, but this gradually subsided after the operation.

Riforma Medica, Naples

September 19, XXX, No. 38, pp. 1037-1064

58 *Post-Traumatic Nervous and Mental Affections. (Sulle neuro-psicopatie post-traumatiche.) L. Bianchi. Commenced in No. 37.

September 26, No. 39, pp. 1065-1092

59 *Post-Infectious Pituitary Syndrome. (Sindrome ipofisaria adiposo-genitale post-infettiva.) R. Massalongo and P. Piazza. Commenced in No. 38.
60 *Diseases of the Blood-Producing Organs with Enlargement of the Spleen. (Sulle emopatie splenomegaliche. VIII.) G. Rummo.

October 3, No. 40, pp. 1093-1120

61 Mongoloid Idiocy. (3 nuovi casi d'idiozia mongoloide osservati a Cagliari.) M. Manca.
62 Improved Staining Technic for Sections. (Le colorazioni su sezioni libere non sparaffinate.) E. L. Tocco.

58. **Traumatic Nervous and Mental Affections.**—Bianchi emphasizes the difference in the course of post-traumatic neuroses and psychoses according as the patient has a claim for an indemnity or not. When there is no question of an indemnity, he usually recovers promptly and completely, but when there is a claim for damages or a pension pending, this keeps alive the consciousness of the injury even in the most upright. Those inclined to malingering at first may actually convince themselves in time of the truth of their statements, and really develop the neurotic symptoms assumed at first.

59. **The Hypophysis Triad: Obesity, Genital Disturbances and Disease in the Pituitary Body.**—In the three cases related, a man of 26 and two women of 17 and 40, previously apparently normal, became obese during convalescence from pneumonia or typhoid, the weight rapidly increasing to actual pathologic proportions and menstruation ceasing. The clinical picture seemed to be the same as that described by Fröhlich as the adipose-genital hypophysis syndrome. No tumor can be detected in the pituitary region and the trouble seems to be the result of the toxic-infectious influences from the pneumonia or typhoid on the pituitary body, arresting or perverting the internal secretion of the posterior lobe. Cases are on record in which the morbid cause was apparently in the adrenals, the genital glands or the thyroid, but the pituitary body takes the lead in this respect. The cases described confirm anew the functional interaction or synergism between the pituitary body and the genital glands. In acromegaly (syndrome resulting from excessive hypophysis functioning) there are phenomena suggesting hyperfunctioning on the part of the genital glands, while in the above adipose-genital hypophysis syndrome, the trouble is due to deficient pituitary functioning. Degeneration or sclerosis from infectious-toxic influences is liable, as well as a tumor in the pituitary body, to induce the hypophysis triad syndrome. This assumption is sustained by the gradual retrogression of the obesity in the case of the older woman under systematic treatment with extract of the posterior lobe of the pituitary body. She lost weight rapidly and diuresis increased, but the arrested menstruation did not reappear. The two other cases date from the era before introduction of organotherapy.

60. **Diseases of the Blood-Producing Organs with Enlargement of the Spleen.**—This article is the eighth of a series of clinical lectures on this topic at the bedside of patients. Rummo takes up in turn the leukemias, Banti's disease and other affections involving the blood-producing organs, and discusses the differentiating points and the treatment.

Hospitalstidende, Copenhagen

November 11, LVII, No. 45, pp. 1345-1368

63 Paratyphoid Intoxication; Fifty Cases. (Epidemien paa Frederiksholms Kanals Kaserne 1912.) K. Lunn.

Ugeskrift for Læger, Copenhagen

November 5, LXXVI, No. 45, pp. 1931-1962

64 *Enlarged Glands with Chronic Rheumatism of the Joints. (Om Svulst af Kubitalglandlerne ved Polyarthroitis chronica rheumatica.) V. Ellermann.

64. **Enlarged Glands with Chronic Joint Disease.**—Ellermann relates that he found the spleen and numerous lymph-glands enlarged in a case of subacute polyarthritis in a child in 1909, and since then he has systematically examined for enlarged glands all his patients with joint trouble. Excluding all dubious cases and those with venereal disease, tuberculosis and uricacidemia, he lists twenty-eight cases of rheumatism in the joints of nine months to seven years' duration. In 50 per cent. the cubital lymph-nodes were enlarged. In normal conditions these glands are not palpable, and they are seldom enlarged with other affections.